

HUMAN EXPERIENCE: INTEGRATING THE SENSES THROUGH THE INTIMACY  
BETWEEN WATER AND THE URBAN FABRIC

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## ABSTRACT

During the 20<sup>th</sup> century, manifestations between water and land have become dissociated from emotional and physical experience, creating a deficiency within our human psyche. The power of water to draw humans has led many civilizations to create permanent settlements along its shores, resulting in over a billion people today living in coastal regions around the world. Over time, the ever-changing coastal environments have caused water to bleed into the urban fabric, resulting in the requirement of fortifications and putting growing pressures on coastal communities. In response, cities must transform and, this project proposes, create interlaced spaces between the two seemingly opposing elements that provide for and focus on the human experience. Nurturing the human experience will provide an improved cultural and spiritual journey through the intimacy between the water's edge, and the urban fabric.

This project explores the human experience of the manmade spaces interlaced between the water's edge and land. Juhani Pallasmaa writes, in *The Geometry of Feeling*, "The quality of architecture does not lie in the sense of reality that it expresses, but quite in reverse, in its capacity for awaking our imagination".<sup>1</sup> Architecture is a multi-sensory experience that engages the emotional, physical, and intellectual parts of our being. This human experience is a journey, where structures, the environment, and the person can communicate and connect. Neglecting the human experience within the construction of interlaced spaces will create an incoherent journey for both architecture and culture.

This project examines architectural spaces that have been built between the water's edge and land while seeking to build an understanding of the importance of the human experience of these spaces. The research gathered will then provide a framework for new designs for the transformation of Honolulu's coastline as the Hawaiian island of O'ahu faces the growing pressures of population growth and water level rise.

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<sup>1</sup> Juhani Pallasmaa, *The Geometry of Feeling: A look at the Phenomenology of Architecture*, (New York : Princeton Architectural Press, 1996), 450.

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## CHAPTER 1: INTRODUCTION

This Doctorate Project has three main goals:

1. Discover the interlaced space between the water's edge and the existing urban fabric.
2. Present new manifestations between water and land that will cultivate human experiences, embodying our multi-sensory experience of spaces.
3. Design the interlaced space within the coastline of Honolulu, Hawai'i while responding to the changing environment.

This project is driven by the cultural/human perception of the relationship between land and water. Often, this relationship is expressed with an antagonism or competition between the two elements. We might say water swallows or engulfs land or land juts into or punctures water. We must, however, create a harmonious dialogue between the two, which will in turn provide a cultural foundation for the respectful interlacing of the water's edge with the urban fabric. This interweaving can add greater value and texture to the existing infrastructure while responding to the ever-changing natural elements involved.

All around us there are examples of living spaces with a direct relationship to water. Living spaces connect to water at the shoreline, are placed as permanent structures offshore, or are created to be mobile in the water. The supporting research for this project explores water in relationship to land and man around the world. We will examine these relationships in Vietnam, Thailand, Cambodia, and the Netherlands. In each of these places, the cultures have developed different standards for adaptation and survival within these ever-changing elements.

The overall goal of this project is to examine and clarify the human experience of created spaces at the water's edge. Acknowledging the existence of numerous and diverse human responses to architecture rather than focusing purely on the physical aesthetics of the structures we examine will help to create a dynamic framework for how we design these transitional spaces and for how this project

approaches the designs for the proposed interlaced spaces in Honolulu. The human experience, which involves emotion and memory, will be the platform on which we create new interlacing spaces at the threshold of water and land, spaces that can help create deeper connections between the user and the environment.

There are two important questions to ask in relation to future architectural design for Honolulu. First, how do we create harmony between human experience and the two different elements within the urban fabric? And second, how do we best design contemporary architecture in the midst of Honolulu's historical context? Creating an interlaced space that evokes human experience within the shores of Honolulu will introduce a new aspect to the urban fabric through both tangible and intangible connections.

This project will show that it is possible to design and build along Honolulu's shores in a way that responds to the problems posed by the ever-changing natural elements while also inform on the human experiences of these interlaced spaces. The project will reveal how this focus in design can enhance the active and social lifestyles for Honolulu's residents and culture. The solution will create a new dialogue in Honolulu. The results will present the correlation between land and water and how users will negotiate these particular spaces.

In order to implement human experience as a solution, we must first examine how human experience is approached in different contexts where water interacts with the urban fabric. We must understand the effects that water infiltration has on the users and how the human psyche adapts to the changes. The following questions can help to clarify different aspects of the relationship between human experience, water, and the urban fabric:

- Does water have a symbolic in meaning in society?
- How is water experienced in different societies and cultures?
- How do we approach human experience in architecture?

- What have other cities created to promote human experience in connection with water and the urban fabric?
- How does Hawai'i treat the relationship between human experience, water, and the urban environment?

The natural elements that impact the water's edge play a vital role in how a coastal civilization will change overtime. Some shorelines are not only affected by seasonal water fluctuations, but also by the more permanent effects of sea level rise. The relative permanence of water plays a valuable role in coastal societies, each society's structure and lifestyle depends on the relationship it has with water, but each must also be adaptable to the fluctuations caused by nature.

Historical context is an important aspect of the research for this project.

Understanding water in relationship to civilization is necessary in order to promote human experience. Water civilizations were built around the power of water in trade and cultivation. Throughout history, water has also played an important roll in shaping religions and culture.

In Honolulu, creating interlaced spaces that focus on the human experience of the spaces between the water's edge and urban fabric will offer a new lifestyle for users, engaging them through the evocation of emotion and memory. The new spaces will portray a new type of architecture that fluctuates with the environment.

### 1.1 OVERVIEW OF WATER AND COASTAL CITIES

The history of the changing relationship between water, man, and the built environment is intriguing. Water has played a vital role in civilizations throughout history, both in terms of survival and of power. Those who had water or aqueducts circulating throughout their cities proved to be stronger and wealthier than those

without. Similarly, those who built along a coastline retained great power stemming from their ability to control sea trade and engage in marine warfare.

The key to understanding the use of water in architecture is to understand the architecture of water and the ways in which water relates to human beings - what physical laws govern its behavior, how the liquid acts, how it reacts with our senses, and most of all, how its symbolism affects us. An American poet and political activist, Muriel Rukeyser, in her poem *The Speed of Darkness*, wrote, "The universe is made of stories, not of atoms." So too is water made of stories, above and beyond the molecular fusion of hydrogen and oxygen. Whenever architects or designers include water in their compositions, they can plunge into a treasure trove of stories about water's physical characteristics, legends, and allegories. Our ancestors have shaped our associations with water today; the lapse of centuries adds to the symbolism and the collected wisdom survives the tides of millennia.<sup>2</sup>

Coastlines around the world are also interesting to observe as they change over time. No coastline remains the same; encroachment occurs shifting the shore's edges minutely or on a grander scale, changing its form. The beauty of it all lies in the unique signature of each coastline, whether it is its geographic contours, the texture of its edges, the types of soil present, the fluctuation of water along its edges, or the civilizations that have born and died there. Each coastline has a story to tell and it does so with its own specific characteristics. The study of coastlines is important today as a significant percentage of the world's population lives along and continues to move toward the coastal areas. In the United States, for instance, between 1994 and 2015 alone, the coastal population increased by nearly 28 million people.

The United States coast is home to some of the nation's most populous cities. In fact, 14 of the 20 largest cities are located in the coastal zone. The population in seven of these cities exceeds one million people. The surrounding suburban areas,

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<sup>2</sup> Charles Williard Moore, and Jane Lidz, *Water and Architecture*, (New York: Harry N. Abrams Incorporated, 1994), 15.

however, are experiencing the most rapid growth. Coastal counties lead in many demographic indicators. During the last decade, 17 of the 20 fastest growing counties were located along the coast. In addition, the coast accounts for 19 of the 20 most densely populated counties in the country. Coastal counties are also undergoing more development than noncoastal areas; 16 of the 20 counties with the largest number of new housing units under construction are coastal counties. With 18 of the 20 leading counties in per capita income located along the coast, these counties are also among the nations wealthiest.<sup>3</sup>

The growth of population within the coastal areas is causing an epidemic for our natural environment. The main reason reported for residents moving to coastal regions is proximity to nature. Ironically, the increase in density of the human populace is causing a decline in our natural environment, destruction of the nature to which we are drawn. Building developments, in order to compensate for the growth of population, are taking over green spaces. We are now faced with new building parameters which seek to meet the needs of the growing population without damaging the coastal environments and their ecosystems.

Looking to the future, the field of architecture in coastal regions is largely focused on the situation created by the incessant rise of water over land, which continuously changes the coastline's edges. Design is focused on creating living spaces that function within these physical and environmental restrictions. However, what this focus neglects is the human experience of the spaces. As long as we perceive the two elements, land and water, as enemies, the interlaced space between them is being blanketed.

A blanketed area is a space that has not been taken advantage of, a space in which the existing urban fabric will not benefit. The consequence of not

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<sup>3</sup> Thomas J. Culliton, "Population: Distribution, Density, and Growth," *National Oceanic and Atmospheric Administration (NOAA)* (1998): 4-5, Culliton, Thomas J. "Population: Distribution, Density, and Growth." National Oceanic and Atmospheric Administration (NOAA). January 1, 1998. Accessed March 10, 2015. [http://state\\_of\\_coast.noaa.gov/bulletins/html/pop\\_01/pop.html](http://state_of_coast.noaa.gov/bulletins/html/pop_01/pop.html) (accessed March 10, 2015).

acknowledging the human experience within these particular spaces will perpetuate the waste of space through the detachment of the human spirit from landscape. We must create a new transitional space between the water's edge and the land focused on the sensory and spiritual human experience, which establishes a new dialogue of connection and harmony.

## 1.2 RESEARCH METHODOLOGY

There are three types of research methodologies that I will use to create the framework of this project:

1. Historical research
2. Case studies
3. Site analysis

The historical research will focus on the role water plays within civilizations around the world. The research will explore how this information affects our insights in the formation of the foundation on which we move through the spaces between water and land. To truly understand this, we must first analyze how experience is created within ourselves as the origin point, and then how humans experience water and the urban fabric, separately. The interlaced space between the water's edge and the urban fabric has yet to be defined in our times. Examining the work of theorists who focus on the human experience of space will help to create a better understanding and framework for the design portion of this dissertation.

The case study method will focus on how water and the urban fabric coexist in different places around the world, examining the differences in the water's edge, the human experience, and the overall adaptations of the urban fabric to water and its environmental challenges at each site. It is important, in understanding each site's relevance, to be able to visualize the site's context, from its topography to its environmental surroundings, as each differs immensely from the other. Therefore,

incorporating case studies with site analysis will help our investigation of these interlaced spaces in order to better design for Honolulu's urban fabric.

The final section of this project will be a combination of research and design. This part will introduce the historical background of the specific site on O'ahu in order to illuminate the unique relationship between the water's edge and Honolulu's urban fabric. A schematic design will also be introduced, which will focus on the human experience of the spaces between land and water that has been neglected until now. The proposed interlaced space will create a new social node within Honolulu. It will reveal the intimacy in the relationship between water and land by engaging human emotion, memory, and experience. It will also promote a socially connected and healthy lifestyle for the users who journey within the spaces.

## CHAPTER 2: HUMAN EXPERIENCE

Phenomenology, a philosophical movement that originated in the early twentieth century, is defined by the *American Heritage Dictionary of the English Language* as, “a philosophy or method of inquiry based on the premise that reality consists of objects and events as they are perceived or understood in human consciousness and not of anything independent of human consciousness.” Because phenomenology is a way of understanding born out of human experience, which is unique to each researcher, theorist, human, and difficult to communicate in its exactness, many of the great thinkers in the movement agree that there exists a “lack of a common and general definition of phenomenology”<sup>4</sup>, including Herbert Spiegelberg, one of the movement’s prominent philosophers, who said that there are as many styles of phenomenology as there are phenomenologists.



Figure 1: First the Building and then the Site

Source: Lucarelli Fosco<sup>5</sup>

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<sup>4</sup> M. Rez Shirazi, *Towards an Articulated Phenomenological Interpretation of Architecture*, Routledge: New York, 2014, p. 2.

<sup>5</sup> Lucarelli, Fosco, “First the Building and then the Site,” 2002. SOCKS, <http://socks-studio.com/2012/08/05/the-future-of-architecture-and-other-collages-by-nils-ole-lund/>



Phenomenology in architecture is often misunderstood. The confusion mostly arises from the discipline's history within the largely philosophical context as well as the many different studies and numerous theories that have evolved. Perhaps the most important idea to understand about phenomenology is the application and connection of the human consciousness in regard to human experience within the surrounding architectural spaces. This chapter will explore the history, methodologies, and applications of phenomenology in architecture.

## 2.1 RELEVANCE TO ARCHITECTURE

Originally developed by the European philosopher Edmund Husserl (1895 – 1938) in the beginning of the 20<sup>th</sup> century, phenomenology was introduced as a bold and radical new way of thinking directed at bringing philosophy back from abstract metaphysical speculation wrapped in pseudo-problems to uses firmly grounded in concrete living experience.<sup>6</sup> Instead of stressing the objective and analytical, phenomenological architects seek to engage with the subjective and emotional aspects of our being through designs grounded in concrete experience and the particular needs and desires of people, site, and context.<sup>7</sup>

As a mode of study, phenomenology strives for the actualization of contact and seeks to meet the things of our world as those things are in themselves and describe them as such. In our normal everyday lives, people are often caught up in a state of affairs that the phenomenologist calls the 'natural attitude', which is the unnoticed and unquestioned acceptance of the things and experiences of daily life. The world of the 'natural attitude' is termed the 'lifeworld,' which is defined as the taken-for-granted pattern and context of everyday life by which we conduct our daily business without having to make it an object of constant attention. When caught up in the 'natural attitude' we are much too absorbed by our own pursuits,

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<sup>6</sup> Moran Dermont, *Introduction to Phenomenology*, (New York : Routledge, 2000), xxii.

<sup>7</sup> Karen Franck, and Bianca Lepori, *Architecture from the Inside Out*, (Chichester, England: Wiley-Academy, 2007), 15.

goals, and purpose to pay any attention to the way the world presents itself to us.<sup>8</sup> Phenomenology examines and clarifies human situations, events, meanings, and experiences.

This brings forward the idea that we can incorporate human experience through the lens of phenomenology to reveal this 'lifeworld' that we get caught up in but do not notice. The blanket that conceals our experience of the world around us is an unconscious aspect of the way in which we live our daily lives.

During the twentieth century, the driving forces of architectural theory and practice leaned toward the intellectual and the abstract. These movements have, over time, created a disconnection between the architect and the common man. The focus on form and aesthetics has led to an approach which creates beautiful spaces but neglects all other aspects of the human experience which has resulted in the estrangement of man from the intimacy and sensuous experience of place and being. The design focus on the intellectual, where the architect creates spaces meant to connect with the educated or intellectual, is called 'Architecture for Architects'. Here, we work to create this symbolic content that can only be understood by architects and those educated in its academic and historical contexts. The context does not register or connect with the common man. Juhani Pallasmaa, a Finnish architect and theorist whose work focuses on architecture and the human senses, writes:

"The current over-emphasis on the intellectual and conceptual dimensions of architecture contributes to the disappearance of its physical, sensual and embodied essence. Contemporary architecture posing as the avant-garde is more often engaged with the architectural discourse itself and mapping the possible marginal territories of the art than responding to human existential questions. This reductive focus gives rise to a sense of

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<sup>8</sup> David Seamon, *The Human Experience of Space and Place*, (New York : St. Martin's Press, 1980), 148.

architectural autism, an internalized and autonomous discourse that is not grounded in our shared existential reality.”<sup>9</sup>

This particular topic is important in how we visualize and interpret human experience at the water's edge. The focus on the intellectual, the aesthetics, and the visual in design has distanced architects from evoking the sensuous and emotional aspects of our human experiences of place.

This ocular centric approach has been further fostered through the architects chosen medium, dictated by economy, of using drawings and models to represent their ideas as physical objects meant to be seen but not occupied.<sup>10</sup> As these objects are examined and scrutinized, the architect, many times, begins to adopt a position of detachment, of being outside his work and situating himself as a maker or spectator rather than an occupant or user.<sup>11</sup> The architect becomes more interested in how the building will look or function instead of how it will be experienced. Focused on visual imagery and detached from social and contextual consideration, the much-celebrated architecture of our time is motivated by self-satisfaction as it attempts to foreground rather than create a supportive background for human activities and experiences.<sup>12</sup>

This examination of phenomenology and architecture has shed light on the importance of designing for the human experience. It has also explained the dearth of human connection in architecture that exists today, based on two major emphases within the field over the last century. The first is the intellectualized architecture theory in which the architect and the common man are segregated. The second focuses on the importance of aesthetics, the visual aspect or art, that leads to the estrangement of man from human experience. In order to understand and then break this segregation between the common man and experienced

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<sup>9</sup> Juhani Pallasmaa, *The eyes of the Skin: Architecture and the Senses*, (Chichester, England: Wiley-Academy, 2005), 32.

<sup>10</sup> Karen Franck, and Bianca Lepori, *Architecture from the Inside Out*, (Chichester, England: Wiley-Academy, 2007), 21.

<sup>11</sup> Ibid., 22.

<sup>12</sup> Juhani Pallasmaa, "Hapticity and Time: notes on Fragile Architecture," *Architectural Review* (2000): 84.

spaces, the designer's approach to human experience must be evaluated. This evaluation of the multiple approaches to human experience will help mend and bring together the contrasting dialogues. The point at which it all meets in the middle is the place from which I will then design the interlaced space between the water's edge and the urban fabric of Honolulu.

## 2.2 APPROACHES TO HUMAN EXPERIENCE

Phenomenological psychologist Rolf von Eckartsberg delineates two general methodologies in the approach to phenomenological research, existential and hermeneutic. David Seamon, a professor of architecture at Kansas State University whose work focuses on environmental and architectural phenomenology, however, adds a third methodology to the list, the first-person, where the examination depends on the researcher's personal experience of the phenomenon. These methodologies provide the researcher with different approaches to evaluating the human experience of the phenomenon or space being studied; each focuses on different sources of the experience cultivated.

The first-person methodology is a more personal approach where the experience's source begins in the memory of the researcher. This is where the researcher draws on his or her own, or first-hand, experience to create connections to the specific space in which he or she is submerged. This first-hand experience plays an important role because it focuses in on an individual within a group. This can create a bridge between the body and mind through its tangible or intangible connection to the design.

In "Phenomenology, Place, Environment, and Architecture: A Review of the Literature", Seamon explains how the researcher uses his or her first-hand experience of the phenomenon as the basis for examining its specific characteristics and qualities. The researcher elucidates his or her own experiences of these characteristics and qualities. This understanding is derived from a world of

one. The researcher must find ways to incorporate the worlds of other as well, which leads us to the existential method.<sup>13</sup>

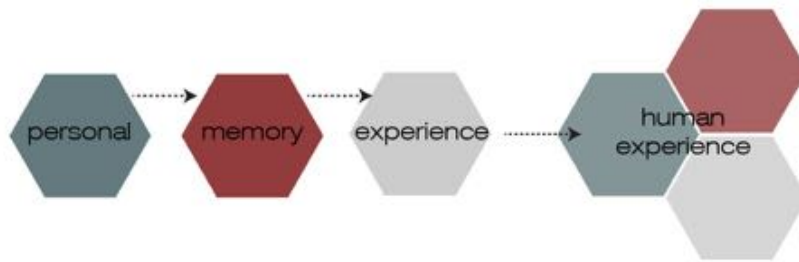


Figure 2: First Person approach

Source: By Author

The existential approach is the interpretation and study of another individual's or group's account of the phenomenon. In contrast to first-person experience, the existential method targets the role of other, of groups of experiences. This is important to elucidating human experience between the water's edge and the urban fabric as it targets a wide network of lifeworlds. It uses the experiences of multiple worlds in order to create a bridge between the body and mind. This bridge is now sourced in a universal network of minds, a vault of memory and emotion.

This basis for generalization in existential-phenomenological research is the specific experiences of specific individuals and groups involved in actual situations and places. Seamon writes, "For von Eckartsberg (1998b, p. 21), the heart of this approach is 'the analysis of protocol data provided by the research [respondents] in response to a question posed by the researcher that pinpoints and guides their recall and reflection.'"<sup>14</sup>

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<sup>13</sup> David Seamon, "Phenomenology, Place, Environment, and Architecture," *A review for the Environmental and Architectural Phenomenology newsletter* (2000).

<sup>14</sup> Ibid.

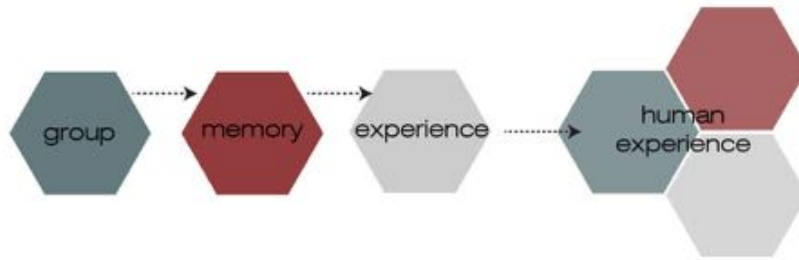


Figure3: Existential approach

Source: By Author

The third methodology, the hermeneutic approach to phenomenology, is the interpretation of 'text' to promote understanding of the human experience of a phenomenon. It is the idea that both tangible and intangible items, or 'text' such as tectonics, lighting, music, dance, poetry, literature, or art, can invoke human experience. The hermeneutic methodology is important in establishing the intimacy between the water's edge and the urban fabric for this project, as it exists within each individual element. This methodology focuses on the poetics of the surrounding environment and how this can create a person's experience of a space.

In contrast to first-person and existential research, the creator of the object being studied, such as the poem or the botanical garden, is often not present during the moment in time when the object is being experienced to make that connection. Understanding is dependent on the person experiencing the space or thing and it is up to him or her to create the bridge between the material source and the mind

and body. The hermeneutic approach may already be seen in the historic threads of our urban fabric, in the form of ornamentation and shadows, which play a role in experience. This will be discussed in more detail in a later chapter.

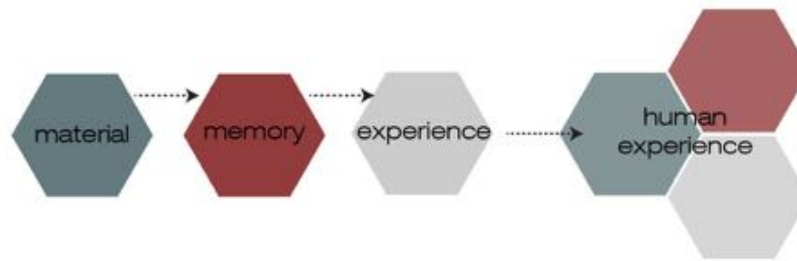


Figure 4: Hermeneutic approach

Source: By Author

This methodology is fascinating because the experience can go in seemingly endless directions. It depends on the researcher's experience of the object, space, or phenomenon to create the connections; therefore it is up to the researcher whether the connections created are happy, joyful, calm, pleasant, or sad. The creator has control only of the visual appearance and physical expression of the creation. The driver of where it journeys to is, rather, the researcher or experiencer. Von Eckartsberg describes this process:

“One embeds oneself in the process of getting involved in the text, one begins to discern configurations of meaning, of parts and wholes and their interrelationships, one receives certain messages and glimpses of an unfolding development that beckons to be articulated and related to the total fabric of meaning. The hermeneutic approach seems to palpate its object and to make room for that object to reveal itself to our gaze and ears, to speak its own story into our understanding.”<sup>15</sup>

There are still many ways to interpret a text. Texts are always evolving within our senses; that cultivate in different environments within furnishings, buildings, cultural landscapes, and settlement patterns.<sup>16</sup>

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<sup>15</sup> Eckartsberg, Rolf Von. “Existential-Phenomenological Research.” *Phenomenological Inquiry in Psychology*, 1998, 50

<sup>16</sup> Christopher Alexander, and Hajo Neis, *A New Theory of Urban Design*, (New York : Oxford University Press, 1987).

## 2.3 APPLICATION OF HUMAN EXPERIENCE

Our senses are awakened through experience, emotion, and memory. This section focuses on the application of human experience through spaces in the works of three theorists who made important contributions in the field of phenomenology in architecture, Peter Zumthor, Juhani Pallasmaa, and philosopher Maurice Merleau-Ponty. As discussed earlier, we can study the relationship between space and experience using three methodologies, first-person, existential, and hermeneutic. Our bodies alone, however, should not be mistaken as the source for human experience here. Instead, the source should be the experience of the human body within the spatial environment. This is important in designing the interlaced space between the water's edge and the urban fabric, as we must gauge how our human experiences are driven. Experience of the interlaced space must not thrive too heavily on one element over the other. The source of human experience must be a balanced, harmonious connection between land and water, and through this union will we create the bridge.

Swiss theorist and architect Peter Zumthor approaches architecture and experience primarily through first-hand exploration, using his own memory and encounters. He also incorporates the hermeneutic methodology by using materials to expose experience. His source, a combination of both methodologies, constantly morphs and changes over time as he gains more life experience. Zumthor, in *Thinking Architecture*, explains:

"I frequently find myself sinking into old, half-forgotten memories, and then I try to recollect what the remembered architectural situation was really like, what it had meant to me at the time, and I try to think how it could help me now to revive that vibrant atmosphere pervaded by the simple presence of things, in which everything had its own specific place and form"<sup>17</sup>

Here, Zumthor explains that a memory, when entered into, can hold many aspects of the spaces that surrounded that particular moment in time. As a personal

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<sup>17</sup> Peter Zumthor, *Thinking Architecture*, (Switzerland: Lars Muller Publishers, 1998), 10.



example, the sound of crashing waves often triggers my memories of overnight fishing with my family on Laie Point on the North Shore of O‘ahu, Hawai‘i. When I enter this memory, I can hear the sound of strong winds, the taste of salty air on my tongue, the feel of ridged rocks under my bare feet, and the sight of shadows cast by the nearby mountains. This one particular experience, the sound of crashing waves, through memory and emotion, conjures in great detail this clear moment in time.



Figure 5: Crashing Waves

Source: By Author

Zumthor focuses on the primary experiences of architecture. The body and mind are in a constant dialogue with the surrounding materials, a dialogue that communicates memories, passing time, and ambitions. Zumthor is concerned not with the form, nor the techniques, nor the specific materials, but rather with the perception of the form, the perception of the details, and the perception of the materials. The “poetic quality,” which Zumthor seeks, comes from the ability of the

architect to create a “meaningful situation for the materials since materials in themselves are not poetic”<sup>18</sup>

Finnish theorist and architect, Juhani Pallasmaa, takes a different approach to architecture and experience by focusing on a group’s cultivation of memory through material poetics and through architectural fragility. In contrast to Zumthor, Pallasmaa’s approach combines existential and hermeneutic methodologies. This approach engages our senses by creating sensuous spaces. Pallasmaa believes that the focus on the visual has taken over architecture and that, because of this, we have neglected the experiences of our other senses, diminishing their input and impact. Pallasmaa, in *Hapticity and Time: Notes on Fragile Architecture*, states that “as a consequence of the power of the eye over the other sensory realms, architecture has turned into an art form of instant visual image. Our buildings have lost their opacity and depth, sensory invitation and discovery, mystery and shadow.”<sup>19</sup>

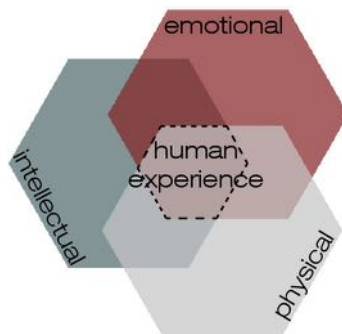


Figure 6: Holistic approach to architecture

Source: By Author

The categories Pallasmaa bases his design on, material poetics and architectural fragility, together create an experience not based on the aesthetics of the space but

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<sup>18</sup> Ibid., 11.

<sup>19</sup> Juhani Pallasmaa, "Hapticity and Time: notes on Fragile Architecture," *Architectural Review* (2000): 86.

rather on the human perception of the space experienced through the intellect, emotions, and the physical body. Pallasmaa's notion of material poetics opposes the sleek, flat modernist tradition and its use of abstracted materials. Instead he believes in materials that favor weather, decay, and vulnerability. Pallasmaa writes, "Matter evokes unconscious images and emotions. Vision places us in the present tense, whereas haptic experience evokes experience of a temporal continuum."<sup>20</sup> When we look at materials in the light of perfection, we lose the idea of experience within the space. The human needs to experience and recognize the value of time that the material has lived through; this connects the user to the space. The notion of perfection in materials is being promoted within contemporary architecture through a focus on technology. This use of technology is replacing human touch in spaces and therefore no memory or emotion is being collected, as time is not manifested.

"Materials and surfaces have a language of their own. Stone speaks of its distant geological origins, its durability and inherent symbolism of permanence; brick makes one think of earth and fire, gravity and the ageless traditions of construction; bronze evokes the extreme heat of its manufacture, the ancient processes of casting and the passage of time as measured in its patina. Wood speaks of its two existences and time scales; its first life as a growing tree and the second as a human artifact made by the caring hand of a carpenter or cabinetmaker. These are all materials and surfaces that speak pleasurably of time."<sup>21</sup>

Pallasmaa also connects experience in his work through what he calls 'architectural fragility'. This is another aspect of design that encourages the users' interaction with the created space in its relationship with time. Time causes a given space to erode, deteriorate as years pass by. The eroding materials give the space character, fostering a connection with the user. In cinematic films, directors create atmosphere by designing spaces that reflect the age of the era in which the story is set; this automatically engages the viewer's emotion. Pallasmaa says, "the

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<sup>20</sup> Ibid.

<sup>21</sup> Ibid., 87.

architecture of weak image is contextual and responsive, it is concerned with real sensory interaction instead of idealized and conceptual manifestations.”<sup>22</sup>



Figure 7: Architecture of weak

Source: Steel Town Anthem<sup>23</sup>

French philosopher Maurice Merleau-Ponty expanded on the idea of the human body as the center of the experiential world. His methodology, similar to Pallasmaa, is a combination of the existential and hermeneutic. Merleau-Ponty writes, “Our own body is in the world as the heart in the organism: it keeps the visible spectacle constantly alive, it breaths life into it and sustains it inwardly, and with it forms a system.”<sup>24</sup> This sets forth our body and soul as never separate in the experience of spaces. Our body and soul are always in constant connection with the environment we pass through. Thus man, as he exists in the world, is both an object and a subject, and the objective and subjective aspects of our being mutually condition

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<sup>22</sup> Ibid., 86.

<sup>23</sup> “Steel Town Anthem,” 2013. <http://steeltownanthem.com/2013/08/13/seth-clarks-studio/>

<sup>24</sup> Juhani Pallasmaa, *The eyes of the Skin: Architecture and the Senses*, (Chichester, England: Wiley-Academy, 2005), 40.

each other.<sup>25</sup> It is this contact with the world through one's body that results in objects having meaning, for the things that surround a person are not experienced as detached objects, but as those having practical, emotional, sensual, and imaginative meaning among others.<sup>26</sup>

## 2.4 PSYCHOANALYSIS TOWARDS HUMAN EXPERIENCE

Carl Gustav Jung is known for his hermeneutic approach to philosophy, where materials create the human experience. This process breaks down into different stages, moving from the material-unconscious mind/personal unconscious to archetype to consciousness mind to human experience. The order is significant; as a person progresses through each stage, more information is collected, building towards memory and experience.

In the hermeneutic approach, a user notices the material which then triggers his or her mind to memory and emotion. The recollection of memory and emotion brings forward human experience. Jung acknowledges this but believes that within this approach, a significant amount of steps occur within one's mind. These steps, which build on one another, are explained in his psychoanalysis approach.

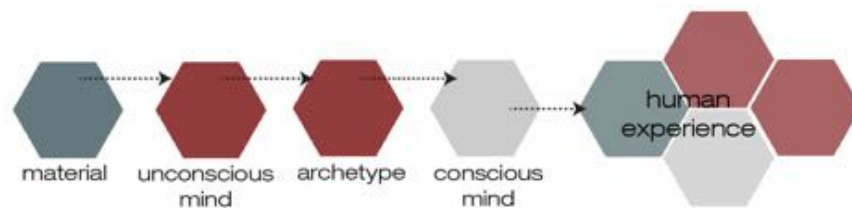


Figure 8: Psychoanalysis Approach

Source: By Author

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<sup>25</sup> Eric Matthews, *Merleau-Ponty a guide for the perplexed*, (London: Continuum International Pub. Group, 2006), 90.

<sup>26</sup> *Ibid.*, 89.

Jung's psychoanalysis approach says that when first approaching a material or object that reminds a person of his or her past, the mind is unconscious. The unconscious mind must be awakened in order to recollect. The process starts with the material. The person acknowledges the material and then gains the effects of the unconscious mind. In the material stage, the mind processes in the unconscious, where the process occurs automatically and thus is not available to introspection. This stage holds our thoughts, memories, and motivations.

Now that the unconscious mind has received the material, the person moves on to the archetype stage. Within this stage, thought, memory, and motivation are examined. This examination focuses on behavior, images, art, space, religion, and dreams. These are transformed once they enter the conscious and are given a particular expression by the person. This expression is based on the individual's upbringing and culture.

From the archetype stage, the person transitions to the conscious mind stage. In the conscious mind stage, the expression created from the memory is now based on man and his symbols, which creates human experience or universal experience. The mind of the person is now awakened and has now made the connection from the material to his or her memory. The acknowledgement has now transformed into personal connection. The connection differs for each person since each person has had different life experiences.

The last stage is the human experience stage. In this stage, the emotion is created by the conscious mind, which engages a person within the specific architectural space. It completes a full cycle, going back again to the material or object. The person now has a new retrospective toward the material or object.

### CHAPTER 3: CHANGES DRIVEN BY THE FORCES OF WATER

In coastal regions, it is the forces of water that primarily drive the changes in land. As we look at civilizations throughout the world, these changes in land differ from region to region. Each region has developed particular ways of working with water and its affects. This chapter will focus on the forces acting on the coastal landscape, the changes in land due to water fluctuation, the hard edges caused by humans, the manifestation of water and land, and the societies driven by water.

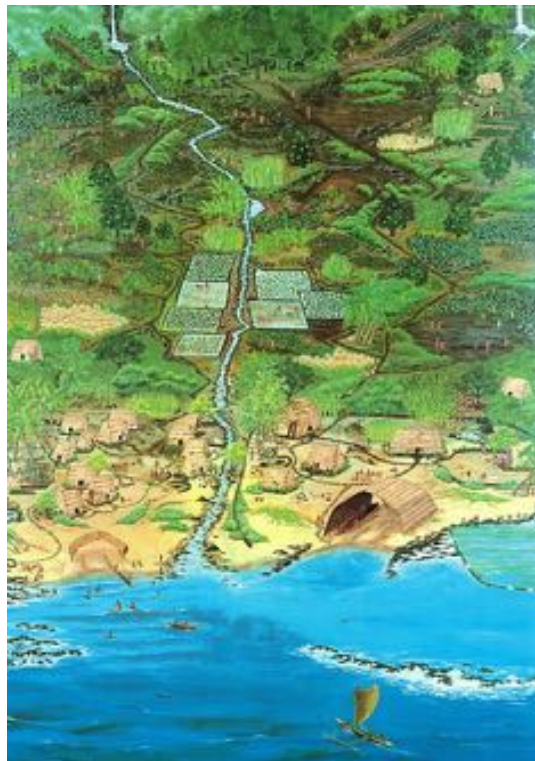


Figure 9: Forces of Water

Source: KU Blog<sup>27</sup>

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<sup>27</sup> "KU Blog," 2013. Ahupuaa, <https://davidlakota.wordpress.com/2013/01/18/ahupuaa-agricultural-association-of-hawaii-aaa-online-business-plan/>.

### 3.1 SHORT-TERM CHANGE

Short-term change on a coastline is often the most detrimental water-related influence on architecture in coastal cities and communities. Short-term changes include tides, waves, and the currents that affect the water's edge. These various short-term changes affect the shore on a daily, weekly, and monthly basis. When building along the water's edge, the tide with its timed movement must be addressed. Tides are divided into three different classes known as the tidal range, which are differentiated by the elevation between high and low water marks. These are:

- Microtidal: < 6.5ft
- Mesotidal: 6.5ft – 13ft
- Macrotidal: > 13ft

Tides are cyclical, influenced by the gravitational forces of the sun and the moon. The most obvious tidal event is the twice-daily rise and fall of the sea. Other astronomical tidal cycles also occur. Every 29 days, the tides fluctuate between increased height, or spring tide, and decreased height, or neap tide. Spring tides occur when the earth, moon, and sun are aligned; neap tides occur when earth-moon and earth-sun axes are at right angles to each other.<sup>28</sup>

We must understand the rise and fall of water and how it impacts the water's edge. Designing cohesively with the tide could play a role in how the overall designed space triggers human experience.

Waves are also important to the water's edge and how we communicate with it based on the force and amount of water applied to the shoreline. Waves are generated when the surface of the sea is disturbed by the wind, tides, or seismic activity. Wave movement and energy transfer have significant implications for coastal management. Wave conditions greatly influence sand transport, which is a major factor in erosion and accretion processes. Waves can be classified as either

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<sup>28</sup> Timothy Beatley, and David J. Brower, *An Introduction to Coastal Zone Management*, (Washington, DC: Island Press, 2002), 33.



constructive or destructive. Constructive waves typically input more sediment than they remove. Destructive waves remove more sediment than they deliver, resulting in net sediment removal.<sup>29</sup> Currents are another short-term change that affects the water's edge. There are two types of currents: shore-normal and shore-parallel currents. These two forms of currents are largely responsible for most coastal sediment movement, which results in changing coastal landforms. Bottom currents occur during major storms, when a fully developed sea approaches land. These currents move at high angles, even perpendicular to the shoreline.<sup>30</sup>

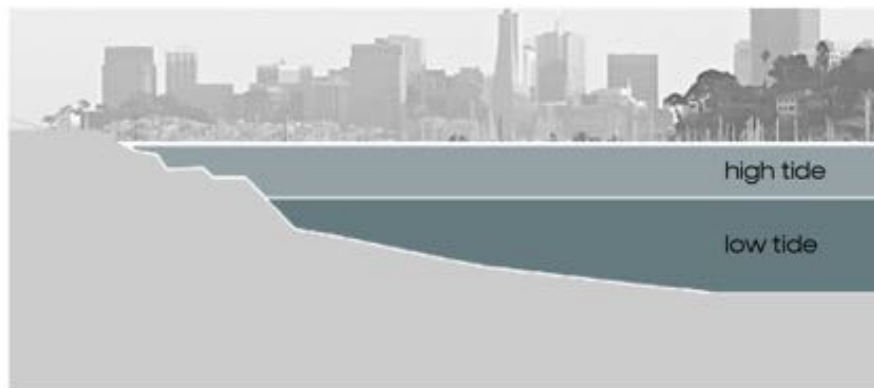


Figure 10: Tidal Diagram

Source: By Author

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<sup>29</sup> Ibid., 31.

<sup>30</sup> Ibid., 32.

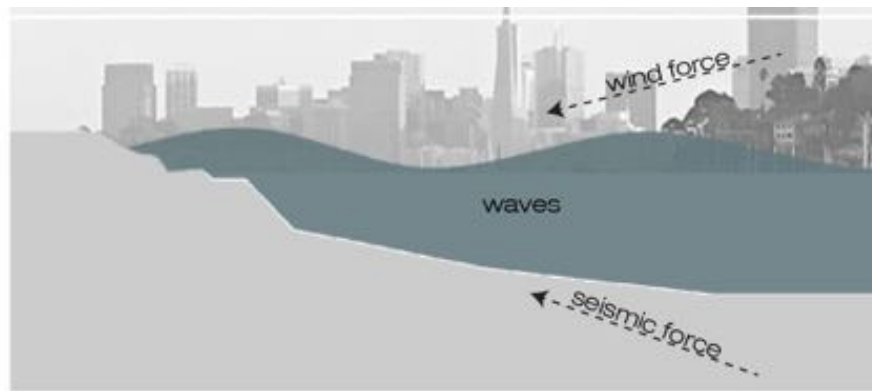


Figure 11: Wave Diagram

Source: By Author

### 3.2 LONG-TERM CHANGE

Long-term changes in or at the water's edge are very important to understand; these are permanent changes in the landscape and urban environment, changes that take years to show their effects. These changes are divided into two groups: sea level rise and the rise in population. These categories are interesting because one group focuses on the relatively permanent change in water level while the other focuses on the gradual influx of population in coastal regions.

We must understand and design for these much more gradual, less perceptible changes in order to work with the coastline and water rather than against them. The growth of infrastructure within our coastlines has happened so quickly in such a short amount of time, and there continues to be such a growing demand, that our solution to creating more space is to extend our existing coastlines with infill. The creation of manmade land to provide for the growing population along our coasts provides a temporary solution for a more permanent problem. This solution, furthermore, does not engage human memory or emotion within its spaces, the dialogue that is necessary for the user's journey through human experience.

Population growth along the water's edge is forcing us to find ways to create more spaces in which we can live, thrive, and play. Coastal population growth is interesting because it not only provides opportunities for economic growth but also causes the urban fabric to flatten. This flattening of the urban fabric is primarily caused by the loss of green spaces, local environmental decay, and energy waste.

The pressures exerted by the presence of human beings at the coast emanate from those of needs. Houses, hotels, condominiums, restaurants, gas stations, shopping malls, golf courses, piers, and amusement parks are spreading along all reaches of America's coastline. All these development projects necessitate infrastructure - roads, bridges, parking lots, sewers - which can exert pressure on the environment or lead to various negative impacts.<sup>31</sup>

Global warming is one of the biggest issues causing an increase in the amount of water permeating our coastline. Changes in the measured sea levels are prompted by ocean circulation, short-term climate variations, storms, and gravitational and deformational effects of land ice changes. Global sea level change is neither constant nor uniform in any region of the world. Changes continually occur as a result of interacting processes within different timescales, from hours (tides) to years (tectonics).

Thermal expansion, glaciers/ice caps/ice sheets, and terrestrial water storage also contribute to global sea level rise. The Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report found that thermal expansion accounted for about one-quarter of the observed sea level rise for 1961-2003, melting of land ice accounted for less than half, and changes in land water storage accounted for less than 10 percent.<sup>32</sup>

Thermal expansion affects the sea level by changing the density of water through temperature or salinity changes. When the ocean gets warmer, seawater becomes

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<sup>31</sup> Timothy Beatley, and David J. Brower, *An Introduction to Coastal Zone Management*, (Washington, DC: Island Press, 2002), 4.

<sup>32</sup> National Research Council National Academics, *Sea-level rise for the coasts of California, Oregon, and Washington past, present, and future*, (Washington, DC: National Academies Press, 2012), 33.

less dense and therefore expands, raising the sea level. Because warm water expands more than cold water with the same amount of heating, global sea level change depends on the distribution of ocean temperature change throughout the ocean, from top to bottom.

Glaciers, ice caps, and ice sheets primarily originate from land-based ice. Loss of land-based ice is major contributor to global sea level rise, equal to or exceeding the contribution of thermal expansion. The equivalent of at least 65m of sea level is stored in the glaciers, ice caps, and ice sheets. The response of glaciers and ice sheets to climate change depends on processes acting at the upper surface, at the base, where glacial melt water and the properties of the bedrock affect the rate of ice flow, and in some locations, at the marine margin, where iceberg calving and melting occurs.<sup>33</sup>

Glaciers, ice caps, and ice sheets typically accumulate mass through snow continually falling on the surface and lose mass through melting and run off. Iceberg calving occurs when sublimation and wind erosion takes place to transport the movement of ice. Calving is the main component to mass loss as it breaks apart from the land and into the ocean.

The Fourth Assessment Report estimated that losses from glaciers and ice caps contributed 0.85 mm a year of sea level rise between 1961 and 2003 and 0.77 mm a year between 1993 and 2003, with the most rapid ice losses occurring in Patagonia, Alaska, northwest United States, and southwest Canada.<sup>34</sup>

Terrestrial water storage is water lost or gained by the continents, which generally results in a corresponding gain or loss of water by the oceans. Terrestrial water is stored in soils and the subsurface (groundwater, aquifers), in snowpack and permafrost, in surface water bodies (rivers, lakes, reservoirs, wetlands), and in

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<sup>33</sup> Ibid., 40.

<sup>34</sup> Susan Solomon, *Climate Change 2007: The Physical Science Basis: Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, (Cambridge: Cambridge University Press, 2007), 337.

biomass. Some of the water withdrawn from these sources as a result of drainage, diversion of surface water for irrigation, and deforestation eventually reaches the ocean, raising sea level at a global, regional, and local scales.<sup>35</sup>

“The Fourth Assessment Report and other previous assessments found large inter-annual and decadal fluctuations in the storage of water on land, likely associated with changes in precipitation, but no significant trend in land water storage due to climate change.”<sup>36</sup>

Long-term change is inevitable. We must find ways to face the situation we are in now without creating more problems for the future. It is important to understand the environment in which we live in order to create a new human experience between the water’s edge and the urban fabric. *Climate Change 2007: The Physical Science Basis* reports that sea level rise will continue to occur and the forces behind these alterations are causing the problem to grow exponentially. As technology develops, we are finding more accurate answers to our questions. The information we are obtaining tells us that changes in water levels are indeed occurring more quickly than we thought; thus we have begun to place higher priority on addressing the forces causing these changes. Because the infiltration of water into our urban fabric is inevitable and real, we must work to find harmonious ways to coexist with the ever-changing natural environment.

### 3.3 INTERSTITIAL SPACES

The interlaced space between water and land must be evaluated and treated as one cohesive piece. Peter Eisenman, a theorist and designer, describes these spaces as interstitial spaces, or blurred zones. Rather than focusing on human

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<sup>35</sup> National Research Council National Academics, *Sea-level rise for the coasts of California, Oregon, and Washington past, present, and future*, (Washington, DC: National Academies Press, 2012), 50.

<sup>36</sup> Susan Solomon , *Climate Change 2007: The Physical Science Basis: Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* , (Cambridge: Cambridge University Press, 2007), 340.

experience, Eisenman uses physical or tangible attributes to establish a connection between opposing elements. When designing for the interstitial spaces, he focuses on the connectivity of two resisting forms, making them as one.

*Blurred Zones: Investigations of the Interstitial* is a book of essays Eisenman put together dealing with these spaces. Eisenman's input on interstitial spaces helps to clarify the conditions between two conflicting forces in an architectural space bringing light to the transitional zone between water and land, as two opposing elements. He explains that the interstitial is the "modification of the material condition,"<sup>37</sup> and that there are two ways such modification can be made. One way is to express the connection in a straightforward, solid, materialistic way in which we clearly see the blend of the two opposing features. The alternative way is through the modification of the containment, which is neither all solid nor all void; it is a relationship where solids and voids work together simultaneously, where there is no visible edge between the two. This relationship represents new and flexible parameters for designing within these blurred zones.

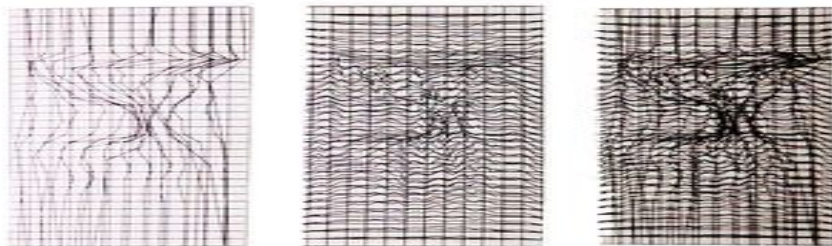


Figure 12: Interstitial Spaces

Source: Veredes<sup>38</sup>

Eisenman discusses several complications a designer faces when building in the blurred space. The first complicating element is how to create a building that takes on qualities of both the determined and the yet-to-be.

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<sup>37</sup> Andrew E. Benjamin, *Blurred zones: investigations of the interstitial: Eisenman Architects, 1988-1998*, (New York : Monacelli Press, 2003), 288.

<sup>38</sup> "Veredes," 2014. <http://veredes.es/blog/en/hacia-una-nueva-contextualidad-miquel-lacasta-codorniu/>

The second complicating element is that the interplay between determination and the yet-to-be staged by the building means that it is then defined by the interplay of finitude and becoming. Becoming is at work both in the continuity of the realization of the finite and, more importantly, in the maintained presence of the yet-to-be, which is understood as the continual opening within the building's work.<sup>39</sup>

When discussing the determined and the yet-to-be staged elements in a building, Eisenman works with the ideas of finite and becoming spaces in a building. The finite spaces contain the context, the program, and the becoming spaces.

Though the designs may not yet be determined, planning and designing within the blurred spaces is a new way to frame the future of architecture in coastal regions. Designing for the transitional space between water and land, we must account for the predictions of the future but also respond to the present constant environmental changes in new ways.

Eisenman's idea of blurring can help us to define the unpredictable elements. Using this as a framework when predicting for the future and designing for the transitional spaces, the freedom to alter the perception of the building and allow for new and undetermined programmatic qualities to occur opens to us. When dealing with the inscrutable element of water, one can likewise allow for unknown changes to occur in the form and for new qualities to manifest in time.<sup>40</sup>

This idea works with the building's need to respond to changes and work with the elements rather against them. Eisenman's design process is one that allows for and works with change. The idea of a blurred zone offers keys to designing more effectively for the transitional space between water and land.

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<sup>39</sup> Andrew E. Benjamin, *Blurred zones: investigations of the interstitial: Eisenman Architects, 1988-1998*, (New York : Monacelli Press, 2003), 310.

<sup>40</sup> Christina Kay, "Coastal Architecture." (unpublished master., University of Cincinnati, 2007), 31.

### 3.4 MANIFESTATIONS OF THE WATER'S EDGE

Over time, many different forces influence the built environment, or manifestations, within the water's edge. These manifestations include maritime cities, water corridors, and resorts. Maritime cities provide a water-centric lifestyle in which the main economy is based on water activities and water-type labor. Water corridors are similar to maritime cities, but work with the movement of water that infiltrates the cities. The water within the cities may take the form of urban rivers, inland waterways, and bridges. Resorts focus on the leisure lifestyle that can be obtained from water. Water is used, here, as a tool in which the viewer sees the horizon of the sea as an extension of the mind. Water in this case is not used within architecture; instead water affects the mentality of the person, which then connects them to the architectural spaces.

Maritime cities are the most common type of manifestation chosen for the transitional space between water and land. Maritime cities provide nodes and destinations for city residents. Historically, the scale of water transportation, the range of commercial trade, and the need for naval presence and protection, were provided for by the constructions of harbors, quays, docks, and fortification. Dubrovnik, situated along the coast of the Adriatic Sea, is an example of a city that built fortifications to protect itself during the medieval period. This waterfront city had to ensure accessibility to trade, access for the construction of new ships, and the future cultivation of the city without sacrificing its safety. Dubrovnik needed its urban waterfront to be accessible yet defensible.

The fortifications built are massive walls that enclose the complex, regular streets, and public spaces. From the walk that extends along the entire length of the fortifications, the city could control the coast. The medieval trading city had to maintain a strategic surveillance of the immediate coast. The spatial separation of



public spaces and the operational quay within Dubrovnik stand in dramatic contrast to the open waterfront and canal side palaces of Venice, Italy.<sup>41</sup>



Figure 13: Dubrovnik Waterfront City

Source: Sights, sounds, and tastes of Dubrovnik<sup>42</sup>

Water corridors are cities that encounter water infiltration within the urban fabric. This water infiltration can take the form of urban rivers, inland waterways, and bridges. An aspect that separates water corridors from maritime cities is the acceptance of water within the urban fabric. A city that is a water corridor must find ways to live harmoniously with the element. After all, the flow of water was established prior to human settlement.

An example of a water corridor is Paris and the Seine River, with its architecture and lifestyles built within the water's edge. The power and strength of water has played

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<sup>41</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 31.

<sup>42</sup> "Sites, sounds and tastes of Dubrovnik," 2012. GuestBloggers,  
<http://www.onthegotours.com/blog/2012/10/sights-sounds-and-tastes-of-dubrovnik/>

a huge role in the development of architecture in Paris. The styles of the facades facing the water reflect the trends and rulers' tastes of the time periods in which they were built. King Henry IV introduced the provision of civic spaces near the water's edge. During Marie de Medici's rule, the winding lanes along the river were transformed into straight lanes to compliment the curvature of the urban river. This also created the need for bridges to be constructed between the two islands. During the reign of Louis XIV, improvements were made to these bridges that artistically transformed them, providing those promenading from one island to the next a more connected experience. During the nineteenth century, Georges-Eugène Haussman, under Napoleon III's direction, replanned central Paris near the Seine and built urban parks, boulevards, and proper drainage for the river and its environs. During this time, many civic spaces were created as landmarks near specific points in the river. Wider streets and open spaces were created in order to provide for a better human experience along the river.

Paris's river space provided terraces and walks and boat landings at water level. Some of these remain as spaces for relaxation intimately linked with the river and protected from urban traffic by high retaining walls. The spaces at water level are defined by the bridges; spaces for the spectator, the promenade, the sunbather, an escape from the rush of city life; some are designed for groups of people to gather together and sit by the water.<sup>43</sup>

These changes were all ultimately caused by the magnetic and dynamic power of water, as an intimate part of the urban fabric. The creation of emotion and journey were clearly important to the various rulers and civic designers of Paris through the ages. The changes that were made expanded and enriched the users' journey within the spaces between land and the Seine River. The design style and connecting factors using bridges and gathering spaces near the water's edge are similar to those found in Venice, Italy. In Venice, a wide network of bridges, social nodes, and alleyways create a link between land and water.

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<sup>43</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 79.



Figure 14: Seine, Paris opportunities

Source: Inhabitat<sup>44</sup>

Resorts, unlike maritime cities or water corridors, focus on human escape from the busy city. Resorts are places of relaxation as removed as possible from city life. The experience of escape is evoked as the user enters the space between water and land. As one approaches the water's edge, the mind and spirit of the user is already prepared for the experience of paradise. Water is an important factor in creating a resort; the idea of looking to the horizon and seeing no civilization, little sign of human influence, creates the mentality of escape.

Wealthy Romans escaped from the oppressive heat of Rome to the cool sea air of the Campanian coastline. In the 1760s, rich American planters from the Southern States and West Indies escaped from the hot season to the cool breezes of Newport, Rhode Island. The Regency and Victorian seaside resorts in England were an escape from the oppressive industrial, urban environment and from its social restrictions. In each era, the need for relaxation and the pursuit of leisure activity has resulted in distinct planning forms and architectural solutions,

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<sup>44</sup> "Inhabitat," 2012. Transportation, <http://inhabitat.com/mayor-of-paris-bans-traffic-from-the-banks-of-the-river-seine/>

architecture that expresses the human need for an escape from life at the water's edge.<sup>45</sup>



Figure 15: Resort

Source: UnitedBulgaria<sup>46</sup>

Anthony Wylson, in *Aquatecture: Architecture and Water*, says that waterfronts are key when creating resorts and are only accessible to the richest people in any given society. In Hawai'i, however, we are surrounded by water, and experience the water's edge, which is accessible to all, every single day. It is important, in designing for the interlaced spaces of Honolulu, to create the experience a resort aims for. The manifestation should not focus on the physical attributes and take the form of condominiums and hotels, but should instead present an experience of relaxation and escape. The human experience, through emotion and memory, will create the resort for the human spirit.

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<sup>45</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 105.

<sup>46</sup> "UnitedBulgaria," 2010. Bora Bora, <http://www.unitedbulgaria.com/bora-bora-too-perfect-to-be-real.htm>

## CHAPTER 4: HISTORY OF WATER ALONG CIVILIZATIONS

The history of water is rich in many cultures, religions, and geographic regions. But why is water so important to these civilizations? And how did water affect approaches to architecture through time? In order to design for the interlaced space between water and land, we must understand why civilizations first started inhabiting the water's edge. This chapter will provide insight into how the qualities of water were used within designs, the relationship between water and humans, and the symbolism of the relationship between land and water.



Figure 6: Global Coastal Edges

Source: Green Action<sup>47</sup>

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<sup>47</sup> "Green Action," 2011. <http://greenaction.org/outdoorlighting.htm>

#### 4.1 MEANING OF WATER IN CIVILIZATIONS AND DESIGN

A wide overview of architecture and water furnishes us with a rich history of meaning and tradition as well as a mesmerizing look at both manmade and natural wonders. Because the fusion of architecture and water is treated carefully and creatively, the potential for meaningful expression is limitless. The world of water embraces every culture; each develops its own ways of designing with water and including it in its architecture.<sup>48</sup>

There are many reasons people choose to settle near the water's edge. The main draw usually involves the need for water for survival, specifically for irrigation, power, transportation, trade, and defense. The water's edge carries within its soils and waters many minerals and nutrients needed for farming. At first, humans depended wholly on the physical location of water. Over time, however, as innovative engineering evolved, humans developed ways to manipulate water and direct it to new places. The Roman Empire, most notably, developed and used a system of aqueducts, a strikingly advanced technology in its day, to bring clean life-giving water to any area it chose. The aqueducts the Romans built "carried water to cities such as Rome, Constantinople, Athens, and Carthage over distances of up to 250 km. More than 1300 major Roman aqueducts are known presently, with a combined length of over 6000 km." <sup>49</sup>

Water within cities has been used as a means for residents to travel between destinations. In Venice, Italy, water travel in gondolas and boats is one of the primary ways humans move about. Because the city's residents and visitors relied so heavily on water to get around, the architecture at the water's edge was designed to promote an experiential journey around the city's infrastructure. The boats themselves were decorated with color and ornamentation. The walls fronting

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<sup>48</sup> Charles Williard Moore, and Jane Lidz, *Water and architecture*, (New York: Harry N. Abrams Incorporated, 1994), 22.

<sup>49</sup> Gül Sürmelihiindi, Cees W. Passchier, Cristoph Spotl, Paul Kessener, Michel Bestmann, Dorrit E. Jacob, and Orhan N. Baykan, "Laminated carbonate deposits in Roman Aqueducts: Origin, processes and implication," *Sedimentology*, 60, no. 4 (2013): 967.

the canals and waterways were designed with decorative architectural features, whereas adjacent walls were left plain. The power of water clearly affected the human response to the surrounding environment. Even though water plays a central role in human movement through the city, the proximity of water to daily life and the degree of fluctuation between the seasons also makes Venice a difficult place to live.

Coastal civilizations incorporated the water's edge in their defense systems, fortifying the edges to protect the cities and harbors. Castillo San Cristóbal at San Juan in Puerto Rico is an example of a city that fortified its coast to protect itself from enemies trying to infiltrate from the sea.

In most coastal civilizations, water was also important for trade, for the movement, import, and export of goods. As civilizations acquired the technological power of transportation through water, trade with other coastal areas, both near and far, became possible. Water offered coastal towns and cities the opportunity not only to grow and create goods, textiles, and weapons, but also to sell them. This was important in both connecting communities to each other and in providing wealth, growth, and stability to the coastal towns and cities. Large-scale offshore trade extended from European cities along the Atlantic and Mediterranean coasts to the east coast of the Americas, around the coasts of Africa, and further east to the Indian subcontinent and beyond.

Water trade on a micro scale can be seen on the Mississippi River, a busy trade route between the northern and southern parts of the United States. Small-scale trade can also be observed in Vietnam, where coastal villages trade goods with each other by boat, a practice that has been in place for hundreds of years. These types of trade were possible only through water.

Through trade, water transportation is used to deliver goods between places, connecting them to each other. However, coastal cities are also often a draw unto

themselves, a primary objective, the main attraction. The iconic atmosphere of coastal cities often reflects the mentality of vacation and paradise. Take Hawai'i and Florida for example; each location is identified as a vacation spot entirely due to its surrounding waterscape.

Because proximity to water can create a relaxing and calming atmosphere, perfect for both vacationers and retirement communities, many coastal regions in the United States have grown rapidly in the past few decades. Some examples include the western coast of Florida; the "exurban" counties located along the Washington, DC metropolitan area's outer fringe including Prince William County, Virginia, Stafford County, Virginia, and Calvert County, Maryland; and southeastern counties including Dare County, North Carolina, Dorchester and Berkeley Counties, South Carolina, and Virginia Beach County, Virginia.<sup>50</sup>

In *Water and Architecture*, Charles Moore discusses architecture's relationship with water in the 1950s. He writes, "Water as architectural material was exuberantly out of step with the straight-laced times, being possessed of mysterious qualities that, for instance, relate the water in a specific place with all the rest of the water in the world."<sup>51</sup> This observation connects us back to the idea of the unknown space between water and land. The characteristics of water are mysterious to us; we do not know its true identity in space and time until a structure is built on or near it and can be experienced and studied. We must design strategically, in a way that does not disturb the natural flow of water, but rather accepts its presence. In his book, Moore also discusses the ways that water and architecture have worked together in the past within different cultures. Each body of water is different; however the creation of structures and how the designer uses water within the space are highly important to human experience.

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<sup>50</sup> Thomas J. Culliton, "Population: Distribution, Density, and Growth," *National Oceanic and Atmospheric Administration (NOAA)* (1998): 6, Culliton, Thomas J. "Population: Distribution, Density, and Growth." National Oceanic and Atmospheric Administration (NOAA). January 1, 1998. Accessed March 10, 2015. [http://state\\_of\\_coast.noaa.gov/bulletins/html/pop\\_01/pop.html](http://state_of_coast.noaa.gov/bulletins/html/pop_01/pop.html) (accessed March 10, 2015).

<sup>51</sup> Charles Williard Moore, and Jane Lidz, *Water and architecture*, (New York: Harry N. Abrams Incorporated, 1994), 6.



In *Water and Architecture*, Moore describes water as a holistic element; no matter the specific geographical location, water is interconnected with the spirit of water universally. He divides the types of bodies of water into three categories: fountains, rivers and canals, and seas. These three categories represent the complete cycle of water on earth.

The first category, the fountain, represents the wellsprings of the mythic water and the cultivation of life. It symbolizes the origin of life and the initial stage of the water cycle. Metaphorically, a fountain that provides water can also be seen as a heart source, pumping blood to create a life-sustaining cycle. Water circulates through a global cycle to nourish the Earth but always returns to its fountain heart-source to be renewed and to begin the cycle again.<sup>52</sup>

Fountains bring to the built environment an interesting element of life. We can find fountains in all parts of the urban fabric, from business and retail to residential. All fountains are designed for one primary purpose - to bring life into a singular space. Incorporating the element of water in the form of a fountain can provide a strong link to water, even when the physical appearance of the fountain is not grand. Fountains not only offer a physical break within the urban fabric, but also create a place where a person can be still, move into a relaxed state of disconnection, and separate his or her mind and body from the day allowing life's hardships to fade away for a time.

Moore's second category, rivers and canals, serve as water's arteries and veins. As the metaphor suggests, rivers and canals are waters of connection and communication. For example, the Panama Canal not only provides a physical link between the Atlantic and Pacific Oceans but also acts as a symbolic corridor

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<sup>52</sup> Ibid., 38.

between the East and the West. Rivers are classic examples of water arteries that flow through both space and time.<sup>53</sup>



Figure17: Venice River Corridor

Source: By Author

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<sup>53</sup> Charles Williard Moore, and Jane Lidz, *Water and architecture* , (New York: Harry N. Abrams Incorporated, 1994), 77.



Figure18: San Antonio River Corridor

Source: By Author

If rivers and canals are the veins, the web and flow of people and life are the blood. A river is always moving and fluctuating, which creates the impression that each “step” we take inside of a river is new. In the same way, the water’s edge is constantly fluctuating; ever changing, and thus every movement and each activity of users within space in the urban fabric is always new.

In ancient Egypt, the Nile River connected the pyramids, cities, towns, villages, and farms, creating an expansive and powerful civilization. The Egyptian people were also connected through the river spiritually; the Nile was said to be the tears of their deity Ra. This is an example of how water can affect the textures within a civilization. In North America, the Mississippi River acts in a similar way, connecting the people all along its shores, from Minnesota in the North all the way to the Gulf of Mexico in the South. Rivers not only sustain life within and around them, but also affect and support the urban infrastructures nearby.

The shape of the river plays a role in the layout of bordering cities, especially when the river penetrates the urban fabric. This phenomenon can be seen in San Antonio, Texas. The San Antonio River Walk, set one story below the streets of downtown along the San Antonio River, is an interesting example because it creates both a connection and a separation between the society above and the urban node below.

Because the River Walk is set at a lower elevation, users experience a sense of escape from downtown San Antonio. Restaurants bordering the river and gondolas moving slowly back and forth along the water provide an atmosphere of leisure and recreation. The textures of the River Walk create such a separate identity that it was named its own separate district. Even though the River Walk is built in the heart of the downtown district, the elevation change and the proximity to water create an entirely distinctive human experience.

Moore’s third category of water is the sea, which represents the beginning and the end of the water cycle. The sea has the greatest power over people’s emotions as it

contains in its vastness memories and experiences. The seemingly infinite waters confront human mortality and smallness, but their extensive presence on Earth cloaks us in feelings of immediacy, intimacy, and belonging. People swim in the sea, cross it on voyages, walk on its beaches, explore its depths, and seek to conquer it. Just as the boundless oceans frame our days, they are also the magnificent beginning and end of the water cycle. The oceans' endless volume continually absorbs fresh water from rains, rivers, and streams to begin the cycle anew.<sup>54</sup>

The sea is so incredibly vast and of such great volume that we have only scratched its surface. We have not come even close to knowing or understanding the entirety of life it holds. The National Oceanic and Atmospheric Administration (NOAA) reports that we have explored less than five percent of its depths.

The sea creates a strong connection between humans and nature. Visualized in the striking imagery of immense waves crashing into the land, the ocean wields a great power that we, as humans, must respect. This power is not bound by or to the Earth's surface. The ocean not only is the basis of life on our planet, but also plays a central role in connecting the land to the universe beyond through the creation of movement based on seasons, tides, coastal geography, and atmospheric conditions.

Let us examine man's connection with the sea. As a person looks out over water to the horizon, an intangible psychological connection can be made. The color of water can physically depict the feeling of an emotion, whether it is the greyness, the blueness, or even the clarity. If we analyze the use of water in film and art, we see that the color of water in a particular scene can set the tone or mood of the piece and greatly affect the experience of the person watching or looking. In film, when a character is feeling happy, we are much more likely to see sparkly blue water in them frame than stormy grey water. In architecture and design, water can be

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<sup>54</sup> Charles Williard Moore, and Jane Lidz, *Water and architecture* , (New York: Harry N. Abrams Incorporated, 1994), 157.

incorporated in seemingly limitless ways. Thus, when creating a waterfront space, it is important to understand the medium of water and the influence that water, in its countless forms, can have on the experiences of the users of the space.

#### 4.2 SYMBOLISM OF WATER

The symbolism of water plays an interesting role within different cultures, religions, and regions in the world. Because humans need water to survive, and water is found in every culture that has ever been known, many symbols for water exist. Almost every known culture has created its own symbolic meanings and representations for water as it affects its people physically, spiritually, and mentally. The symbols used differ from culture to culture based on this particular relationship; for some, water is a largely destructive force while for others it is largely beneficial.

The four major elements that have been depicted symbolically throughout history are water, earth, fire, and air; each has its own characteristics and identity, its own strengths and weaknesses. The strengths of the element of water are the history it contains in its essence and the fluidity of its physical nature. The Earth has been engulfed in water from the beginning of time, as we understand, and life on this planet was born from its depths and continues to rely entirely on its presence on earth.

Water has a strong power over the human spirit; we are emotionally connected to water. From water, all life is born. After conception, we spend nine months in the womb, engulfed in and surrounded by water. Water is also found within us; seventy percent of the human body is composed of water. Without water, we die.

The color of water plays a role in the element's symbolism; the different variations of color represent different human emotions. The color blue, for example, can represent coolness, peace, and openness. We find two main categories of water symbolism in connection to cultures: physical symbolism and spiritual symbolism. In physical symbolism, water is compared to items that can be touched or created.

In spiritual symbolism, water is defined as a creator, the force from which all life and humanity began.

On a macro scale, across civilizations water was symbolized as the creator of the world, a spiritual symbolism. In most South Asian cosmogonies, in the myths that tell how the world came into existence in primordial times, water predates all creation. Through its fluidity and elusiveness, water is a symbol of chaos and the absence of form. Because the waters are the essence of life, they are regarded as divine. For example, in other cosmogonies, a god is said to have intervened in the process of creation, for instance Visnu as Varaha, who in the form of a boar dives into the waters and brings up the first clod of earth from the bottom of the cosmic ocean and hence life begins.<sup>55</sup>

Water does not have a solid form unless it is frozen and yet it is perceived and symbolized as a sculptor of the world. If we look at coastal edges, we can see the continuous, ongoing art pieces that water carves into cliffs, hills, and coasts. The coastal cliffs of New Zealand, for example, display remarkably harsh edges and concaves, water's mark along the shores.

Water has created monumental sculptural environments that man will never equal. In the Sierra Nevadas, the Grand Canyon, the Utah canyons, the limestone channels and caverns of the Ohio Valley, the Appalachians, and many other places, water has carved rock into infinite forms and textures, limited only by the nature and the hardness of the material.<sup>56</sup>

It is because of this phenomenon across the planet that water is symbolized as a sculptor. It is difficult to imagine another element in the world that is so central and so vital both to basic life and to a diverse range of aesthetic and recreational pleasures.

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<sup>55</sup> Julia A.B. Hegewald, *Water architecture in South Asia: a study of types, development and meanings*, (Leiden : Koninklijke Brill, 2002), 11.

<sup>56</sup> Craig S. Campbell, *Water in landscape architecture*, (New York: Van Nostrand Reinhold, 1978), 12.

Another common symbol of water is the embodied enjoyment of life; this speaks of water's free-flowing, unrestricted, unbounded, and capricious nature when left untouched. The playfulness of water in any site, especially moving water, whether natural or manmade, provides a sense of activity and life. Water, when used within plazas in the urban fabric, creates an escape from the surrounding business district and thus symbolically connects the space to play and activity. Incorporating water into the urban fabric not only promotes freedom and playfulness but also creates an urban node within a city. Points where water is designed into the city often become known as landmarks; people use them to help navigate through a city's diverse roads.

Alongside water's playfulness is its ability to create a sense of relief and coolness in hot, arid places. For this reason, water features are ideal in play areas, particularly in sections of the country with long, hot summers. A perfect example of both water's playfulness and its ability to help cool can be seen when fire departments in New York City open up fire hydrants for the community, especially for children, during heat spells. Play areas in many cities that include water in their landscape incorporate it into sculptures and fountains in such a manner that these spaces are as much works of fine art as they are recreational features.<sup>57</sup>

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<sup>57</sup> Craig S. Campbell, *Water in landscape architecture*, (New York: Van Nostrand Reinhold, 1978), 65.



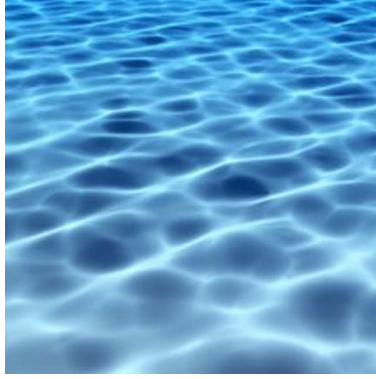


Figure 19: Water as a soother

Source: Shutterstock<sup>58</sup>

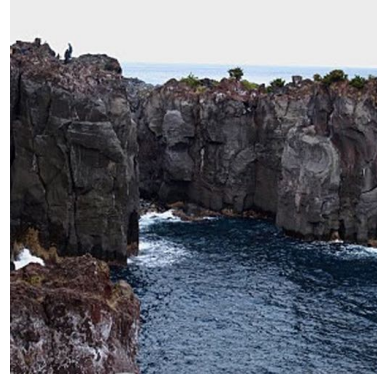


Figure 20: Water as an sculptor

Source: Wanco, Mi<sup>59</sup>



Figure 21: Water as an entertainer

Source: Stolfi, Chris<sup>60</sup>

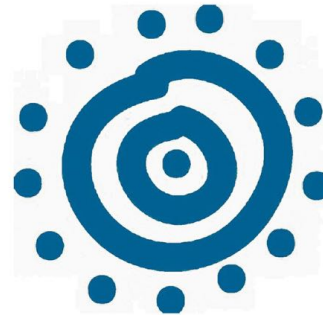


Figure 22: Water as life and cultivator

Source: MacMillian, J.<sup>61</sup>

In terms of life and the cultivation of life, water is also symbolized as mother because water gave birth to life on this planet and continues to nurture and make life possible. Water provides the nutrients for harvests to thrive in all regions of the world allowing civilizations to grow and expand. Water, in the form of rivers that connect different nodes within cities, generates a bond that reaches out toward the

<sup>58</sup> "Shutterstock," 2003. Water Texture, <http://ak.picdn.net/shutterstock/videos/514552/preview/stock-footage-underwater-closeup-texture-background.jpg>

<sup>59</sup> "Wanco, Mi" 2011. Lentils, [http://3.bp.blogspot.com/\\_qGQvI3Joj8c/TTk57Bq03QI/AAAAAAAAAC6A/x3o-XIE-8Ws/s1600/P1157523.jpg](http://3.bp.blogspot.com/_qGQvI3Joj8c/TTk57Bq03QI/AAAAAAAAAC6A/x3o-XIE-8Ws/s1600/P1157523.jpg)

<sup>60</sup> "Stolfi, Chris" 2011. WOSU, [http://wosu.org/2012/capturecolumbus/files/2011/07/5919085043\\_6a5b998c27\\_b-1000x617.jpg](http://wosu.org/2012/capturecolumbus/files/2011/07/5919085043_6a5b998c27_b-1000x617.jpg)

<sup>61</sup> "MacMillian, J." 2009. Drops of Change, <http://www.dropsofchange.com/wp-content/uploads/2009/01/aztec-drop-master.jpg>

cities edges. Due to its life-creating essence, it is hard to deny the symbol of mother for water.

In many cultures, rivers were, and sometimes still are, regarded as divine. Because water is the essence of life, some cultures believe that earthly rivers originated in heaven; they are the continuation of heavenly waters on Earth and are the offspring of the gods. In South Asia, rivers are venerated not only to ensure good crops but also to promote fertility in women. Women who want offspring may bathe in rivers on certain banks, which are particularly renowned for their fertile properties.<sup>62</sup>

Water today obtains its symbolism and meanings from the records we hold of the past, which we must understand and respect when designing for the interlaced space between water and land. The symbolism of water used in this project's design will establish the user's experience of the water's soul and spirit as it is integrated into the urban fabric of Honolulu. It is important, however, to avoid tokenism in the design. Tokenism is defined by *The American Heritage Dictionary* as, "the policy of making only a perfunctory effort or symbolic gesture toward the accomplishment of a goal." In other words, the design should not rely entirely on the symbolic meanings of water and should avoid simply replicating or duplicating the physicality and spirituality of water. An example of tokenism here in Honolulu might be adding decorative features such as tiki posts, grass skirts, and coconut trees to a design. Tokenism negates the effort of creating real human experience through design.

#### 4.3 HUMAN EXPERIENCE OF WATER THROUGH CULTURE

As discussed earlier, different cultures view and use water differently within their architecture. One of the main reasons for the differing views of water within design is culture. If we compare inhabited spaces near water in Persia and Japan, we will find that the two regions view water within architecture very differently. Persia

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<sup>62</sup> Julia A.B. Hegewald, *Water architecture in South Asia: a study of types, development and meanings*, (Leiden : Koninklijke Brill, 2002), 15.

positions water in architecture as the primary focal point. Water is to be noticed and to be placed at the center of a site. In Japan, water is a part of humanity as an extension of our spirit. In Japanese tradition, landscape and humanity are the same entity, which promotes peace and harmony in design.

In some cultures, water is a sacred element and should not be wasted. The use of water in architecture in these places is less focused on the connectivity to human spirit and more focused on the amount of water that can be used within the design.



Figure 23: Katsura Palace (Japanese Garden)

Source: By Author

The traditions within religions play a vital role in the way in which a culture or community views water. In the Christian tradition, water signifies the rebirth of a person. Baptism with water is used to express a person's vow of devotion and to represent the promise of eternal salvation. A baptismal plunge in the Jordan River purifies the soul by washing away the person's sins. The Bible says, "I will sprinkle clean water on you, and you will be clean; I will cleanse you from all your impurities

and from all your idols.”<sup>63</sup> Similarly, as Moore points out, during certain Hindu religious festivals in India, “thousands flock to the Ganges for ritual immersion. Despite the fact that the river is usually brown and muddy, its purifying, redemptive power is never diminished.”<sup>64</sup> And, “in the Koran, water is a gift from God, a token to mortals of divine omnipotence and omniscience.”<sup>65</sup>

In the classical world, Greeks had a metaphysical appreciation of certain natural landscapes and water elements, which influenced the choice of temple sites.<sup>66</sup>

The classical world established architectural values and planning forms that were again revived during the Renaissance, when aspirations were released from the protective mantle of the Middle Ages. Water regained an architectural significance, both as a feature within civic spaces providing an element of pleasure in landscape gardens and as a context of urban maritime activity.<sup>67</sup>

The renewed appreciation of water within the classical world brought to light and built upon the idea of using water in design and culture. This movement established a strategic architectural direction, which led to imaginative planning in order to take advantage of the views, the sun, and gardens.

In the Islamic world, in places such as the Middle East, India, and Pakistan, water is used minimally within architecture to maximize its effects on the user. Architecture is used to reflect or represent what heaven will look like after judgment day - beautiful, intricately designed structures surrounded by lush gardens with springs and water fountains. Because the created must represent the heavens, it is important that all of the human senses are engaged through architecture. Each designed garden, for example, must include four essential components: “water for irrigation, display, and sound; shade trees for shelter; flowers for scent and color;

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<sup>63</sup> *The New English Bible; New Testament*, (New York: Oxford University Press, 1961).

<sup>64</sup> Charles Williard Moore, and Jane Lidz, *Water and architecture*, (New York: Harry N. Abrams Incorporated, 1994), 20.

<sup>65</sup> *Ibid.*, 17.

<sup>66</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 5.

<sup>67</sup> *Ibid.*, 6.

and music to delight the ears.”<sup>68</sup> Together, these components shape the experience of a person journeying within the spaces.

In Spain, culture and architecture was highly influenced by the Persian Moors who introduced the idea of using water to bring beauty to a space in a functional way. The Moors believed that a single drop of water should not be wasted and that it should be used strategically to trigger the human senses. Water was confined to small channels or narrow pools; none was allowed to escape unused. For irrigation, conduits ran from tree to tree, a method that directed water in courtyard gardens through interconnected surface channels, a detail now common throughout Spain.<sup>69</sup>

Moorish architecture in Spain focused on creating an experiential human journey. Generalife Gardens in Granada, for example, was built on the premise that water will guide the visitor through the gardens. A visitor will be drawn to follow the water’s course and, through the sounds of its trickles, will know the certain path they should take. In a typical fountain, water is contained by a ledge or surrounding wall. In Alcazar Gardens in Seville, however, water has no boundaries, fountains have no walls, and yet the visitor feels welcome to approach the water as closely as he or she desires. This type of fountain is a great element, especially on hot summer days, as it offers visitors wandering through the gardens a chance to cool off.

The Renaissance and Baroque periods in Europe provided a humanistic revival of classical influence that affected all aspects of life. This was a time during which the arts and architecture flourished and modern science was born. In Baroque Europe, water architecture was focused on the user’s experience of spaces. Although the design of gardens followed strict rules for overall form and symmetry, a beautiful artistry was displayed. A garden was treated as a painting and water, a brush,

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<sup>68</sup> Craig S. Campbell, *Water in landscape architecture*, (New York: Van Nostrand Reinhold, 1978), 18.

<sup>69</sup> *Ibid.*, 20.

guiding the experience around the movement of water. Literature, poetry, and symbolism also influenced the formulation of spaces and movement. These driving forces were important during the Renaissance period because they promoted emotional connections to the users. In the same way, architecture worked to link spaces to the user emotionally, mentally, and physically. Landscape architecture that included water provided a journey for each user to experience in his or her unique way. The fluid movement of the gardens in Renaissance and Baroque Europe can be seen in Villa Lante, Bagnaia, where the water channel moves with artistic grace throughout the garden spaces.



Figure 24: Villa Lante, Bagnaia

Source: McCown, Ken<sup>70</sup>

differ from western gardens and landscape architecture. The Western garden and its water features are generally created by a professional designer who was hired by a client who then contracts with a third party to install the design. All western

In the Chinese and Japanese traditions, landscape and architecture are visualized as one cohesive being. All elements are connected to each other, from the physical created space to the landscape to the water. Each has a direct connection to the other; no force displays any hierarchy; each is equally powerful. Within Chinese and Japanese art and landscaping, a spirit of harmony, simplicity, and peace is evident.

Chinese and Japanese traditions

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<sup>70</sup> "McCown, Ken," 2009. Florablog, <http://www.florablog.it/2009/07/03/dieci-candidati-per-il-premio-il-parco-piu-bello-ditalia/#>

gardens and water features are relatively easy to accurately measure and draw up in elevation and plan and are derived from specific units of measurement and geometry. Chinese and Japanese gardens, on the other hand, were typically designed by poets, painters, and monks who often lived on the premises and installed the gardens themselves.<sup>71</sup>

These designs by poets and artists are slightly more similar to how the gardens were created in Renaissance and Baroque Europe, but the Chinese and Japanese cultures provided the poets and artists with no restrictions on spaces or location of spaces as they consciously directed the gardens toward emotion and experience. The Chinese and Japanese gardens could be viewed as more organic and raw than those of Renaissance and Baroque Europe, as all activities were connected to the water that weaved through them.

The basis for the historic Chinese tradition in landscape design, in particular, was a naturalistic philosophy of life. The Chinese regarded mankind as a part of nature whose laws were orderly, peaceful, and helpful to humanity. Chinese Taoism showed sensitivity toward the natural environment and this was reflected in the close association between building and naturalistic landscape in traditional Chinese architecture. In the *Tao Te Ching*, Lao Tzu writes, "Nothing in the world is as soft and yielding as water. Yet for dissolving the hard and inflexible, nothing can surpass it. The soft overcomes the hard; the gentle overcomes the rigid."<sup>72</sup> Anthony Wylson, in *Aquatecture: Architecture and Water*, notes that "Taoist teachings were designed to promote tranquility and oneness with nature, a respect for natural co-existence and for the transforming forces of nature."<sup>73</sup>

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<sup>71</sup> Craig S. Campbell, *Water in landscape architecture*, (New York: Van Nostrand Reinhold, 1978), 47.

<sup>72</sup> Lao Tzu, *Tao Te Ching*, (London: Frances Lincoln Limited, 1999), 78.

<sup>73</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 8.

#### 4.4 SYMBOLISM OF LAND

The contrasts between water and land is another area of study that needs to be fully understood in order to design for the space between water and land in Honolulu. Will the human experience within the transitional space lean more toward the characteristics of water or will it lean more toward those of land? Or, will it be a fusion of both?

Land is an interesting topic because it has a personality quite different to that of water. Land is static and firm while water is fluid and easily manipulated. Land is associated with stability and the formation of structure. Across the planet, land is defined by definite boundaries, from continents, to countries, to states and regions, and even to personal property. Water, on the other hand, blends together; the planet has one giant ocean to which we have given different names - the Pacific, the Atlantic, the Arctic, the Indian and the Southern. All of these oceans, however, blend together with no physical marker to demarcate where one ends and another begins. The only boundary between them is land, which acts as landmarks of separation.

The symbols of land are various and many and can be found throughout the world. The volcano, the pagoda, the valley, the mountain, and the cave are some land features commonly represented symbolically that each have unique characteristics. The volcano is an example of land's destructive potential. The Persians associated volcanoes with Ahriman, the destructive entity within the universe who was shackled at the core of the earth awaiting the Day of Judgment. In Greek mythology, Hephaestus, the god of blacksmiths, fire, and volcanoes, built his workshop in the center of a volcano below Mount Aetna.<sup>74</sup> In the Hawaiian culture, Pele, the goddess of fire, is responsible for the volcanic activity on the islands of Hawai'i. She is known for her destruction but also for her creation of new land; she is the symbol of fertility, sustenance, and unlimited creativity.

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<sup>74</sup> David Fontana, *The Secret Language of Symbols*, (San Francisco, California: Chronicle Books, 1994), 114.



The pagoda, a development of the Buddhist stupa, represents man's ascent to heaven and traditionally has seven stories to mark the seven stages of ascent. The pagoda also stands for Mount Meru, a holy mountain which, according to Hinduism, Jainism, and Buddhism, is the center of the physical, spiritual, and metaphysical universe.<sup>75</sup> The valley, a protective, feminine symbol, is associated with fertility, cultivation, and water. David Fontana, in *The Secret Language of Symbols*, discusses the symbolisms of various land features,

In the Chinese and Christian traditions, the valley is linked with darkness and the unknown. The mountain is the meeting place of heaven and earth; mountains symbolize the masculinity, eternity, and ascent from animal to spiritual nature. Mountaintops are traditionally the home of weather gods. Lastly, the cave is a feminine symbol, and carries a range of meanings. It can represent the heart of the world, the unconscious, and the entrance to the underworld, initiation, or esoteric wisdom.<sup>76</sup>

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<sup>75</sup> David Fontana, *The Secret Language of Symbols*, (San Francisco, California: Chronicle Books, 1994), 114.

<sup>76</sup> Ibid.



Figure 25: Volcano Symbol

Source: By Author



Figure 26: Pagoda Symbol

Source: By Author



Figure 27: Valley Symbol

Source: By Author



Figure 28: Mountain Symbol

Source: By Author

## CHAPTER 5: CONNECTING TO THE URBAN FABRIC THROUGH EXPERIENCE

A building or dwelling is important to us as human beings; it not only provides shelter but also a connection to history and culture. We unconsciously relate to a building's structure, both emotionally and spiritually; this draws out human experience. George Dodds, an author and professor at the University of Tennessee College of Architecture and Design, reflects on the interdependence between man and the world around him,

Man articulates the world through his body. Man is not a dualistic being in whom the spirit and the flesh are essentially distinct, but a living corporeal being active in the world. The world that appears to man's senses and the state of man's body become in this way interdependent. The world articulated by the body is a vivid, lived-in space. The body articulates the world. At the same time the body is articulated by the world.<sup>77</sup>

As we move into the future and continue to mold the field of architecture in the world, it is important to remember the past; we must not treat it as merely a memory of what happened before but value it as an influential part of our culture. How can we then incorporate contemporary architecture with that of the past within the urban fabric? How can these thrive together? Is it possible for two such different dialogues to successfully interact with each other in a city? Why do we even care about the urban fabric; what significance does it hold for us?

Discovering and understanding how contemporary and historical architecture can coexist is necessary for designing for the journey of human experience that can be created in a space. As we seek to build new spaces within historical cities, it is also important that we know the urban fabric for which we are designing. This will help us to understand whether the new manifestations will bring forward new life or destruction. Themes that encompass this path to understanding include

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<sup>77</sup> George Dodds, *Architecture of Tadao Ando: Body and building essays on the changing relation of body and architecture*, (Cambridge, Massachusetts : MIT Press, 2002), 47-48.

community, tectonics, urban landscape, tokenism and idolism, movement of postmodern architecture, craft and ornamentation, and city.

In "Seven Points for the Millennium," Kenneth Frampton describes how architects play a vital role in how human life is affected by architecture. He looks to the future and predicts how we will adapt from what we have created in the present, for example from the use of parking structures or of baron rooftops. He believes there are three essential elements involved in design - history, design, and technique. When used together, these help connect the urban fabric, past and present, and prepare for the future, both socially and culturally.

Architecture, as opposed to any other form, is irredeemably mixed up with the life-world. In this respect it is as much a context for culture and life as it is a cultural expression in and of itself and hence it cannot be convincingly rendered as fine or figurative art. Writ large: When architecture is reduced to large sculpture, it is not only formalistically reductive but also an critical mode of expression that may pass muster as art but is hardly architecture.<sup>78</sup>

As Frampton explains, architecture is inextricably tied up with culture in a kind of give-and-take. Set within the historical urban fabric, contemporary water architecture then will play a role in affecting both the culture of today and history. It must not take the form of a mega structure that punctures the urban landscape; it should manifest as a connection to the historical structures from which it branches. Creating architecture in terms of tokenism, symbolism, or sculpture removes the human connection to the created spaces as well as the urban fabric.

Today we design and create sleek new structures defined by the rise in technology and innovation. We create contemporary designs alongside historical buildings but most often do not acknowledge the presence of these structures. This leaves a scar or a rift in the fabric. In our eagerness to grow and create, we tend to overshadow historical buildings and, because of this, they are becoming obscured.

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<sup>78</sup> Kenneth Frampton, "Seven points for the Millennium: an untimely manifesto.," *The Journal of Architecture*, 5 (2000): 21.

But why is it important to embrace historical buildings within the urban fabric? When an urban fabric does not have some type of landmark that promotes culture and history, the fabric is left with no meaning. The community is built around culture and history; there is no successful urban design where history is ignored.

Is it possible, then, to create new structures while working collaboratively and cohesively with the surrounding historical buildings? Integrating historical buildings into contemporary architecture first requires a thorough understanding of the values of the existing buildings. Modifications of historical and contemporary structures involve special social and architectural considerations. There must be a strong relationship between the existing building and the contemporary adaptation; connections in scale, texture, atmosphere, color, and dialogue must be considered. To identify and design this collaboration, we must understand the reasons for modifying the two structures, the treatment that the existing historical building must undergo, how the two buildings physically and atmospherically connect to each other, as well as any precedents that portray the achievement of this manifestation. After all, the path to connection with the past is through culture and through the tectonic textures of the existing architecture.

Norman Tyler states, "The role of historical preservation is to ensure that such critical perspectives are not ignored and to insist that our society looks carefully both at where it has been and where it is going."<sup>79</sup> Projects that can achieve this are truly the greatest form of historical preservation. For contemporary architecture to do this, the architect must highlight and preserve the elements of time while ensuring that this new manifestation uses a language that engages the present to maintain the life of the building. The design must simultaneously speak of the past and of the conditions of the present.

In "Seven Points for the Millennium," Frampton states that the relationship between product form and place form plays a role in designing in regions where culture is

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<sup>79</sup> Norman Tyler, *Historic Preservation; An Introduction to its History, Principles, and Practice*, (New York: WW Norton & Co, 2000), 12.

embraced within architecture. Do we emphasize materials and product form that is technology-based or do we design for place form in relation to the local habitat and culture? When designing contemporary architecture that collaborates with historical architecture, we must understand the community and culture.

## 5.1 VALUES ON HISTORIC URBAN FABRIC

As we know, historical buildings play a vital role in how we perceive and interact with a city. History influences how the future will be molded. A historical building's original construction, its original purpose, and its current meaning provide its value and context in the present. It is important to understand fully the value of a historical building rather than simply the value of its exterior skin; replicating the physicality of a building is called tokenism. Tokenism combines old with new, but cannot connect the built space to human experience. Tokenism uses symbols but does not respect or incorporate the depth and richness of the original historical structure it imitates.



Figure 29: Waves of Abu Dhabi

Source: The Waves<sup>80</sup>

The value of a historical building lies in its craftsmanship, the choice of materials used, how a user interacts with the space, and the stories it holds. Historical architecture is rich in culture, soul, and life. What physically differentiates historical architecture and today's architecture is human touch, where in the past, human

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<sup>80</sup> "The Waves" 2009. Skyscraper City,  
<http://www.skyscrapercity.com/showthread.php?t=484732>

hands created the building materials used. The materials that are being used now and in the near future, such as glass and steel, reflect the idea of minimalism. Structures built of glass and steel, however, do not carry the same sense of life as those built of materials carved and crafted by humans; we feel little connection to these materials manufactured by machines.

As humans we feel connected to the spaces around us; it is inevitable. The emotions materials can invoke continuously seek out our attention and acknowledgement. I believe that tectonics, as architect and philosopher Kenneth Frampton defines it, “the potentially poetic manifestation of structure,”<sup>81</sup> is not only affected by the materials that are used within structures, but also by the person who enters a space. The human or user is a part of the tectonic whole. There is no interaction between person and building if one does not acknowledge the other. It takes the two forces to reach this manifestation. Humans are tectonic pieces because we understand and interpret the message that the materials within buildings promote; we dissect and filter the poetry they emanate. Correspondingly, materials create atmospheres that can evoke certain emotions or feelings in the user. It is a relationship that sutures the seeming gap between the two.

Spirituality plays a significant role in the connection between humans and place. If the human body can be considered a part of a structure's tectonics, the structure's relationship to man can be seen as a bridge between man's physical body and the spiritual realm. It is important when designing a space to activate this relationship in order for the space to reach its full manifestation. Historical architecture largely displays this ability, whereas the architecture of the present and near future neglects the spiritual realm and the connection to spiritual experience that it can provide. Thus, we are not reaching our full potential.

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<sup>81</sup> Kenneth Frampton, “Rappel à l'Ordre: The Case for the Tectonic.” [1990]. *Labour, Work and Architecture: Collected Essays on Architecture and Design*. (New York: Phaidon, 2002), 92.

Peirce Lewis, in “Axioms for Reading the Landscape,” the first essay in the compilation, *Interpretation of Ordinary Landscapes*, writes,

Our human landscape is our unwitting autobiography, reflecting our tastes, our values, our aspirations, and even our fears, in tangible, visible form. We rarely think of landscape that way, and so the cultural record we have “written” in the landscape is liable to be more truthful than most autobiographies because we are less self-conscious about how we describe ourselves.<sup>82</sup>

Landscapes, which the environment and human hands together have created, are the canvases on which our stories are told. In this, they reveal the realm of spiritual connection to us. This is a connection that we must not lose, forget, or ignore. It is important to understand that the physical and spiritual are two aspects of one entity, but we separate them through our manipulation of the urban fabric. As we design today, we create physical structures using a mental framework; we have not mastered the connection of the inner being, or spiritual realm, to the world around us.

A man sets himself the task of portraying the world. Over the years he fills a given surface with images of provinces and kingdoms, mountains, bays, ships, islands, fish, rooms, instruments, heavenly bodies, horses and people. Shortly before he dies, he discovers that this patient labyrinth of lines is a drawing of his own face.<sup>83</sup>

Pallasmaa describes the connection between the physical and the spiritual through images, both animated and poetic, and how these are written into our lives. Historical architecture and cities display this poetic imagery he speaks of; historical spaces render images in our minds that are lived rather than merely experienced. Living and experiencing have two strong yet distinct meanings. Pallasmaa explains that a landscape or a city should be lived rather than experienced. For example, when a tourist visits a new city and explores all its aspects, the tourist tells himself that he has experienced the city. However, when a tourist visits a new city and

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<sup>82</sup> D.W. Meinig, ed., *Interpretation of Ordinary Landscape*, (New York: Oxford University Press, 1979), 17.

<sup>83</sup> Jorge Luis Borges, *Epilogue from the maker*, (New York and London: Penguin Books, 2000), 143.



consciously acknowledges the culture, the lifestyle, and the history, this is when he has lived the space. A historical city more easily allows a user to live its spaces because it contains culture, lifestyle, and history. Contemporary architecture cannot offer the same to those visiting; its skin is transparent and does not contain the elements that allow a space to be lived, only experienced.

Another factor that distinguishes historical from contemporary architecture and cities is the value of time. Time is something that cannot be manipulated or duplicated. Time is appreciated by users of all generations and is observed the



Figure 30: Value of Time

Source: PD4Pic<sup>84</sup>

instant a space is entered.

When we view gothic architecture, the passage of time is immediately evident, in the rawness of material, in the faded colors, in the way light hits eroded concrete, in the style of architecture that is no longer practiced yet still honored. Time in the form of

erosion is deadly for architecture, but there is great beauty in this: true life is exhibited and appreciation is served.

Lewis Mumford, in his essay "What is a city?" writes,

Cities are comprised of a series of institutions - the government citadel, the economic market, and the community - and, of those three, it is the community that is the least well-defined but most authentically expressive of the people of the city at large in their families, neighborhoods, and local cultures.<sup>85</sup>

He goes on to point out that the urban fabric is the connection through spirituality and the environment through landscape rather than the physical attributes, but

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<sup>84</sup> "PD4Pic" 2010. Aging Brick, <http://www.pd4pic.com/brick-aging-architecture-background-stone-wall.html>

<sup>85</sup> Lewis Mumford, "What is a City?" *Architectural Record*, no. 5 (1937): 91-95.

what is more intriguing is his later comparison of users to actors on a stage. He compares the urban fabric to the theater, the nodes or social gathering places to the stage, and the users that interact in these particular areas to actors. When users gather in a particular space, they act. They eat, sleep, sit, stand, laugh, cry, or interact in any number of ways; numerous amounts of activities are taking place. What does this have to do with a historical urban fabric? Architecture is the place setter for the stage; it sets the time, emotion, and atmosphere. A historical urban fabric, unlike its contemporary equivalent, can trigger our connection to the spiritual through tectonics, culture, and heritage. This metaphor, however, is not perfect. A theater, the stage, and the sets built for a specific performance are temporary and more or less perfect; they are created for a particular moment in time. The urban fabric, on the other hand, is permanent; it is created to last and to withstand many changes. In the theater, every single prop and spotlight has a role to play, a specific purpose. Can we say the same about a historical urban fabric? Are all structures important and necessary?

## 5.2 MISCONCEPTIONS OF THE CONNECTING FORCES

A primary challenge that arises when designing new spaces that need to connect to existing structures is the language between the old materials and the new. The new design must have intrinsic value but must also speak to the past as represented in the particular historical setting. As guardians of history, we choose the things that we save or inherit, giving them significance. We must choose wisely, especially when designing a new building, because saving too much could alter the design by relying too heavily on the past, leaving no room for the creation of something new. The new design should compliment but not copy or replicate. Building a fake façade in order to match the tripartite of an adjacent historical building is frowned on because this seems to mock rather than embrace the existing building and does not solve anything.



Figure 31: Contemporary Material

Source: Metal Cladding<sup>86</sup>



Figure 32: Historic Material

Source: Metal Cladding<sup>87</sup>

Another challenge in building within a historical setting is the acceptance and criticism of the local community, who is rightly fully invested in the neighborhood. The local community's misconceptions can play a significant role in the criticism it gives a new structure built adjacent to a historical one. The public is not privy to the design intent or process; the public instead sees the materials or skin of the new structure. For example, when the members of a community view a steel and glass structure being built next to a historical building they might assume the architect's intent was to provide contrast. On the other hand, if a new structure uses a material such as brick, the community might view this as trying to fit in. To prevent both community misconceptions and the negation of the history existent in the urban fabric, it is important to design new spaces that embrace the historical architecture by meeting it in a neutral zone in both materials and scale.

A community ultimately forms how a city will manifest. The community is the driving force; the city is made by and for the user. Cities differ from one another because the community and culture within each is different; the economic, political, social,

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<sup>86</sup> "Metal Sight," 2013. Metal Cladding,  
[http://www.metalsight.com/website\\_images/header\\_19.jpg](http://www.metalsight.com/website_images/header_19.jpg)

<sup>87</sup> Jason Peir, 2009. Brick Wall in Philadelphia,  
[https://c2.staticflickr.com/4/3601/3369788289\\_4f83b48371.jpg](https://c2.staticflickr.com/4/3601/3369788289_4f83b48371.jpg)

and religious forces that drive a city forward differ. For example, Las Vegas' community embraces gambling as a primary economic force and thus the community manipulates the city to this end, creating a place of flashing lights, drenched in sin, lust, and greed. This is what the community has accepted, is accustomed to, and even envisions for its city.

Another example is Dubai, where new technology and visions of architecture converge. The community backing Dubai presents it as a new city invested in creating an unusual oasis through technologically advanced and innovative architecture. The community works to create a city that expands past water, seeking new heights for mega structures that no man had thought possible. This is the image the community has invested itself in and this is where the community's power lies.

It is at this point, however, that misconceptions come into play, and a designer or architect can be blamed when something that is not wanted is produced. We may easily blame the architects for creating something indifferent and innovative, but we must also look at the community that is behind the project. The community plays a vital role in setting the parameters and expectations for a design and thus in the outcome of new structures. Therefore, the community must remember that it has this power and can wield it to manipulate the urban fabric.



Figure 33: Las Vegas, Nevada

Source: Jonathan Twena<sup>88</sup>

If we take another look at Las Vegas and Dubai, both dramatic examples of great investments of wealth and technology, the question arises: are these particular cities examples of ornamentation? Do they attract users primarily through flashing lights and new technological materials? Using ornamentation to attract users to a city is a transparent way to create architecture. There is no historical context for these materials and details and little meaning around them and thus the user experiences no spiritual connection. Even so, he or she may experience a great physical connection and attraction. But is this what we ultimately want, what we seek?

Due to innovations in technology, we are able to create awe-inspiring structures with intricate, technological designs very quickly; but in this, there is little authenticity. Authenticity exists when a city can provide something that another may not have, a connection that another city may not provide. Any city can create a

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<sup>88</sup> Jonathan Twena, 2014. Las Vegas,  
<https://www.flickr.com/photos/jontwena/15684923017/in/photolist-9UrU3t>

structure with aluminum skin and operable louvers, but where is the authenticity in this? Authenticity can include the tangible and intangible where the culture is made accessible through the arts and language.

Adolf Loos, in his essay, "Ornamentation and Crime," originally published in 1908, examines the downfall of creating structures that primarily focus on ornamentation in order to be accepted by society. During the Renaissance, architectural designs began to include ornamentation. This represented the shifts occurring within the culture and the movement and expansion of art through invention. It was a tangible movement that was widely appreciated and accepted. Today, however, ornamentation is used differently; it is used as a way to draw attention to a structure, to make it stand out. Though ornamentation is part of the Las Vegas culture, the architecture and design represents the illusion of a magical land meant to provide an escape from daily life. In this case, ornamentation represents illusion rather than a window into culture.

Loos explains that today's ornamentation was revived so the richest could experience various artistic movements without having to travel. This particular idea of ornamentation mirrors tokenism. Tokenism occurs when symbolism in design is created to replicate the original source, thus neglecting authenticity. Loos includes the modern tattoo culture as an example of ornamentation, where users are adorning themselves with tattoos in order to fit into a certain social image but which are empty of meaning, authenticity, and aesthetic value.

Loos damns today's practices of ornamentation as destructive, wasted manpower that produces useless product.

The enormous damage and devastation caused in aesthetic development by the revival of ornament would be easily made light of, for no one, not even the power of state, can halt mankind's evolution. It can only be delayed. We can wait. But it is a crime against the national economy that it should result in a waste of human labour, money and material.<sup>89</sup>

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<sup>89</sup> Adolf Loos, *Ornament and Crime*, (California: Adrian Press, 1997), 21-22.

He goes on to discuss how ornamentation has even become a trend in marketing and is used to draw greater attention to products. Loos claims this is dishonest and inauthentic since competing products whose companies do not invest in ornamental marketing provide similar or identical results.



Figure 34: Ornamentation

Source: Ornaments<sup>90</sup>

It is of central importance when creating contemporary architecture that will alter the urban fabric, especially within a historical context, to acknowledge and reach out to the city's community. This is imperative because the community's psyche holds the location's memories, history, and connections across generations. A community that lives within the space being designed for may dramatically reject a new structure, but may also accept it. Imagine the countless number of times that the specific image of the city is engraved on the mental slides of a city resident; now, to change the canvas of the city without acknowledging the

resident's experience may feel intrusive to him or her emotionally or physically. This is why we must reach out to the community and include the residents in the decision-making processes involved in the design.

Change is inevitable. Change will always occur stemming from the newest technologies and designs that can benefit a city's population. The critical issue facing decision-makers and conservationist professionals is how to accommodate this change within heritage places and how to add new layers to the historical

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<sup>90</sup> Ornaments, 2014. Merchants National Bank, [https://www.flickr.com/photos/a2z\\_mpls/1678693057/in/photolist-ekJLzj-gRE6Hj-](https://www.flickr.com/photos/a2z_mpls/1678693057/in/photolist-ekJLzj-gRE6Hj-)

urban environment in ways that recognize, interpret, and sustain their heritage values.

Over the decades, there has been much debate regarding whether or not contemporary architecture has a place within the historical urban environment. This conflict of values has pitted conservationists against planners and developers. Conservationists, as a unit, perhaps unfairly, are seen as anti-development and anti-progress, a group putting a stop to future expression within architecture and design. It is, therefore, important to determine and make clear the role contemporary architecture can play in contributing to this inevitable change in ways which will celebrate the special character of the historical environments and conserve these spaces for future generations.

### 5.3 ICONS IN THE URBAN FABRIC

In a historical city, there is great potential for architects to design buildings that stand out, thereby weaving new meanings into the existing historical context. Some examples of cities that have successfully incorporated such new structures, or icons, within their historical urban fabrics are Paris (France) with the Eiffel Tower, Bilbao (Spain) with the Guggenheim Museum, and Sydney (Australia) with the Sydney Opera House. Each of these cities created icons not only to attract visitors but also to incorporate a new layer within the urban fabric. These new structures may be beautiful, but how much iconic architecture does a historical city need before it reaches a tipping point? Will the city lose its historical value if too much iconic architecture is built within its perimeter? In the future, will cities be so full of iconic buildings that are unrelated that the fabric loses its traditional meaning altogether?





Figure 35: Icon on Historic Structure

Source: Sam Javanrouh<sup>91</sup>

Ironically, it is the community that controls whether or not contemporary iconic architecture will be accepted within the urban fabric. In the case of the Eiffel Tower and Paris, it was not the local community but rather the larger world community that eventually accepted and embraced its presence and permanence. The tower was originally designed as a somewhat temporary structure for the World's Fair of 1889. When this mega structure, at the time, the tallest in the world, was being built, many in the local community, led by prominent figures in the arts establishment, vehemently rejected the plans for the tower in what is known as the Artists' Petition, comparing it in an official protest to "a gigantic black factory chimney."<sup>92</sup> They claimed the structure did not sufficiently represent the culture of Paris or of France; the only aspect that it embodied was the industrial movement to create new structural ways of building. Once the tower was completed, however, and over two million people visited it during the World's Fair, it was publicly proclaimed an

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<sup>91</sup> Sam Javanrouh, 2009. ROM, [http://www.thestar.com/content/dam/thestar/life/travel/2009/11/22/roms\\_crystal\\_ranked\\_number\\_8\\_among\\_worlds\\_10\\_ugliest\\_buildings/roms\\_crystal\\_ranked\\_number\\_8\\_among\\_worlds\\_10\\_uglies\\_tbuildings.jpeg.size.xxlarge.letterbox.jpeg](http://www.thestar.com/content/dam/thestar/life/travel/2009/11/22/roms_crystal_ranked_number_8_among_worlds_10_ugliest_buildings/roms_crystal_ranked_number_8_among_worlds_10_uglies_tbuildings.jpeg.size.xxlarge.letterbox.jpeg)

<sup>92</sup> La Tour Eiffel. "Debate and Controversy Surrounding the Eiffel Tower." Tour Eiffel Paris. <http://www.toureiffel.paris/en/everything-about-the-tower/themed-files/71.html> (accessed November 5, 2015).

outstanding success. Now, the Eiffel Tower is at the very heart of what makes Paris Paris. It is as much a part of Paris as the Cathédrale Notre-Dame de Paris, the Basilique Sacré-Coeur, the Arc de Triomphe, or the Seine; it has become one of Paris' major iconic pieces.

In analyzing this situation, it is important to note that the local community's acceptance of a new iconic structure is rather hit or miss. The real question, though, is whether or not we need iconic structures at all. The idea of creating a new iconic structure to add definition to a city has been attempted many times and has many times failed. Many new and upcoming cities are trying to push the envelope with architecture in an effort to distinguish themselves, seeking what Paris obtained from the Eiffel Tower. We may conclude that the main reason most cities attempt this is for the great economic promise that lies in the potential boost of attention and tourism, which could significantly enhance the municipal economies.

Roland Barthes, a French philosopher and literary critic, wrote the essay, "Eiffel Tower," of his observations and reflections on its presence and meaning in Paris' cityscape. Of its purpose, which he compared to a dream, a myth, something much more than itself, he wrote,

In order to satisfy this great oneiric function, which makes it into a kind of total monument, the Tower must escape reason. The first condition of this victorious flight is that the Tower be an utterly *useless* monument. The Tower's inutility has always been obscurely felt to be a scandal, i.e., a truth, one that is precious and inadmissible.<sup>93</sup>

Even with Paris' example, we must not create useless, disconnected architecture when designing iconic structures within a historical urban fabric. It is interesting that popular contemporary iconic architecture is deemed by many critics to be useless due to its often-incoherent connection to the surrounding environment. Though we in the urban communities are responsible for this, we are also responsible for the current popular culture we take part in that thrives on this type of ideal city. The only

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<sup>93</sup> Roland Barthes, "Eiffel Tower," *Rethinking Architecture: A reader in Cultural Theory* (1997): 172-175.

iconic structures that can give meaning to a city's fabric without criticism are natural icons, those created by the land itself. An example of such a natural icon is Diamond Head in Honolulu, Hawai'i. It is fully accepted and embraced by the community; it holds within its familiar, iconic form a distinct thread of the city's historical urban fabric colored with the history and culture it contains.

#### 5.4 TECTONICS AND HUMAN EXPERIENCE

Technology may be at the forefront of today's culture, producing solutions and inventions that affect our lives in ways we could not have fathomed a century ago; but this technology-centric world we have created also marks the quiet death of the tectonic world that we have lived in till now, destroying the aspect of human touch that triggers the experiential components within our souls. Frampton, in "The Case for Tectonics," discusses the etymology of the word *tectonics*, which is derived from the Greek word *tekton* meaning builder or carpenter, and has been used to refer to carpentry or construction as poetry; the carpenter or builder is the poet that creates emotion and character within a building.

What significance does this hold for our culture today and for the future? Through technology, we have achieved what was once thought impossible in architecture, such as building a structure almost entirely of glass as Philip Johnson did with his Glass House. However, there exists a growing fear of tectonic fading in the shadow of our booming technology. As humans, we are touched by the physical characteristics that a building possesses, the shadow it creates, the cracks in the concrete, the rawness of materials. But with technology successfully perfecting materials, reducing the aspects within them that connect our human senses to the experience of space, our physical connection to built space will become extinct.



Figure 36: Glass House by Philip Johnson

Source: Art League<sup>94</sup>

Tectonics can be viewed around the world, from historical urban architecture to vernacular architecture. In “Thinking in Shadow,” Anderson speaks of the important role tectonics play in our buildings and in our lifeworlds. He discusses the importance of the imperfection and weathering of materials as the harsh environments manipulate their physical natures. He writes,

Thinking in shadow requires an understanding that buildings, while stable are not static, and that ‘finished’ building materials are changeable and plastic when subjected to highly variable effects of light and weather. Five hundred years of existence contribute a powerful aura to a building; this aura emanates from the materials of a building and is revealed in shadows, blemishes.<sup>95</sup>

He offers graphic representations of the soul of each material as it ages. Anderson compares building materials to living beings; as we enter spaces that embody

<sup>94</sup> Art League, 2014. Glass House, [http://www.thestar.com/content/dam/thestar/life/travel/2009/11/22/roms\\_crystal\\_ranked\\_number\\_8\\_among\\_worlds\\_10\\_ugliest\\_buildings/roms\\_crystal\\_ranked\\_number\\_8\\_among\\_worlds\\_10\\_ugliestbuildings.jpeg.size.xxlarge.letterbox.jpeg](http://www.thestar.com/content/dam/thestar/life/travel/2009/11/22/roms_crystal_ranked_number_8_among_worlds_10_ugliest_buildings/roms_crystal_ranked_number_8_among_worlds_10_ugliestbuildings.jpeg.size.xxlarge.letterbox.jpeg)

<sup>95</sup> Alex T. Anderson, *Thinking in Shadow*, (Seattle, Washington: Students in the Dept. of Architecture, College of Architecture and Urban Planning, 2001), 42-47.

tectonic form, we interact with the materials and building as if they were human, communicating through human experience and emotion.

In the study of tectonics, materials and buildings need not portray ornamental attributes to exhibit character. A material that embodies tectonic form may evoke a powerful notion with the simplest form. This type of tectonics can be observed in the Koshino House in Japan, created by Tadao Ando. In this building, Ando fostered the connection between the user and building through interactive natural light elements, slits in the façade and roof, large open windows, and transparency of entry. He used unadorned concrete throughout. This material, smooth and delicate, possesses minimalistic attributes and character but promotes a powerful effect, even more powerful than a decorative storefront, as its flaws, including cracks, bumps, discontinuation of coloring, and disconnection of pieces, are clearly revealed through the sunlight streaming in. His effort to bring forward emotion in the spaces creates the bridge between body and building.

Through the transition away from tectonics, will we experience a loss of identity? Due to modern advances in technology, tectonics, while still present in certain ways, is not fully developing this manifestation of body and building. The boom of technology that correlates with globalization, rapid development, and construction carries a scary potential: a future in which we live in a world where the superstructures that surrounds us have no meaning or emotion. Frampton also predicts that tectonics will subside. He foresees the current market-driven expediency and fashions in architecture as well as the technological changes that impact the process of construction and design as a threat to tectonics in architecture. With the introduction of this type of conflict, he argues, architecture will become scenographic with a fashionable upfront design quality that will devalue the meaning of the constructed object. Furthermore, the influences of the digital culture will deemphasize the material and structural characteristic that a building may possess. In *Studies in Tectonic Culture*, Frampton writes, "The problem with technology does not reside in the benefits that it affords but in its emergence as a

quasi-autonomous force that has stamped the epoch with its gestalt. Technology has the tendency to transform everything, even a river, into a standing reserve."<sup>96</sup>



Figure 37: Tectonics casting shadows

Source: Light and Shadow<sup>97</sup>

The German philosopher Martin Heidegger also discusses the capacity of architecture to express different materials, each material with its own moment in which the world comes into being. In Heidegger's *Off the Beaten Track: Origin of the Work of Art*, he argues that tectonic form, at its root and in its essence, is interconnected with 'being' and 'truth'. This validates that his idea of origin in materials as they connect the body and building is beyond our nature to do so.

That which gives to things their constancy and pith, but is also, at the same time the source of their mode of sensory pressure - color, sound, hardness, massiveness - is the materiality of the thing. In this definition of the thing as matter, form is posited at the same time. The permanence of a thing, its constancy, consists in matter remaining together with form. The thing is

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<sup>96</sup> Frampton, Kenneth. "Corporeal Metaphor." *Studies in Tectonic Culture*. (Cambridge, Mass.: MIT Press, 1995) 11.

<sup>97</sup> Light and Shadow, 2010. Flickr,  
<https://www.flickr.com/photos/horwath/5603987238/in/photolist-9xcUaC-bsEsDk->

formed matter. This interpretation of the thing invokes the immediate sight with which the thing concerns us through its appearance.<sup>98</sup>

Revisiting Johnson's Glass House, we see it is a building that expresses an idea yet no tectonic form is available to produce understanding and connection for the user. The Glass House is an interesting subject; minimal material is used to create a house. Johnson, an avid art collector, described the windows of the structure as a metaphor for painting canvases. He explained that the furniture, rather than interior walls, provided the divisions within the space; the user would use furniture as points of reference indicating in which part of the house they were standing or acting. This particular subject, however, while interesting as a work of art, has no tectonic texture. The body has no way of connecting with the building. There are no shadows produced, a quality which Anderson holds accountable for the rawness in tectonics. Looking to the future, we can foresee the use of fewer materials in building. With advancements in technology, structures no longer need thick facades for stability. Is technology, however, the only factor to blame in this situation? I think not. We must take responsibility not only for ourselves but also for the living environments we are creating. Whether we are to live in a transparent, scenographic world or a world that utilizes material and evokes emotion through the manifestation of the relationship between body and building.

The role technology is playing now, without a change in direction and value, marks the diminishing of tectonics. Our use of technology can, however, still create characteristics that can connect space to the body and mind. We, as creators of tomorrow, must understand that we cannot thrive in a world where architecture is ruled by fashion, scenography, and branding that will shape our perspectives of and relationship to architecture long into the future.

Tectonics and landscape work together to create a potential experience and memory for the user. The user receives this human experience where landscape can be seen as a cultural connection in which our sense of place and memories

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<sup>98</sup> Heidegger, Martin, and Julian Young. *Off the Beaten Track*. Cambridge: Cambridge University Press, 2002. 14-15.

thrive. The experience that occurs is different for each user that enters the space as each is unique. Margaret Drabble mentions, in *A Writer's Britain: Landscape in Literature*, that the memory of landscape is not always associated with pleasure; it is sometimes associated with loss, pain, and anger. The sense of loss of a loved place directly expresses the sense of landscape lost which triggers our human experience.

The past lives on in art and memory, but it is not static: it shifts and changes as the present throws its shadow backwards. The landscape also changes, but far more slowly; it is a living link between what we were and what we have become. This is one of the reasons why we feel such a profound and apparently disproportionate anguish when a loved landscape is altered out of recognition; we lose not only a place, but ourselves, a continuity between the shifting phases of our life.<sup>99</sup>

We see and create landscape as a result of our beliefs and ideologies. This is why the journey through landscape is a cultural construct, a mirror of our memories and myths connected with meaning, which can be interpreted personally. Landscape is the work of our own mentality giving us entry to another atmosphere. Simon Schama, in *Landscape and Memory*, states that, "Before it can ever be the repose for the senses, landscape is the work of the mind. Its scenery is built up as much from strata of memory as from layers of rock."<sup>100</sup>

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<sup>99</sup> Margaret Drabble and Jorge Lewinski, *A Writer's Britain: Landscape in Literature*. (New York: Knopf, 1979), 270.

<sup>100</sup> Simon Schama, *Landscape and Memory*, (New York: A.A. Knopf, 1995), 6-7.



## CHAPTER 6: ANALYZING HUMAN EXPERIENCE ON CASE STUDIES

Analyzing case studies will evaluate just how water and the urban fabric coexist with one another. Most importantly it will analyze how human experience is being manifested within spaces around the waters edge. The case studies analyzed will not only provide information on how different regions have worked with water rising onto the land. It will propose multiple solutions for Honolulu and the future issue on sea level rise. The multiple solutions will create interlaced spaces that Honolulu's waters edge may obtain to create a harmonious connection between water and land.

The case studies that are to be analyzed:

- Venice, Italy
- Hamburg, Germany
- San Antonio, Texas

The selected regions that are to be analyzed were strategically chosen due to each one's approach to the challenge of water level rise within the urban fabric and the solutions created in order to promote human experience within the location. Each location was also chosen to cover the multiple layers of water issues around the globe due to their significantly different climates and infrastructure.

In order to analyze multiple case studies within different regions effectively, we must look at both macro and micro scales of the study. The case studies will be analyzed in multiple categories: site, infrastructure, water experience, urban experience, methodology, material/texture, and procession. These categories will target multiple driving forces in which promotes human experience.

## 6.1 CASE STUDY #1: VENICE, ITALY [OCEAN]

### Site

Venice, Italy a maritime trading and cultural independence have created this unique historical water city. It is built on a system of 118 small islands interspersed with a network of 160 canals, just northeast of the Adriatic Sea in the Venetian Lagoon. It is the close relationship between the urban fabric, waterways and the sea has been adapted within time, developing from the compact mercantile medieval Republic, to the present complex of cultural emporium, industrialized port, and leisure resort. Whereas many European ports that have continued to function as such by adapting to new conditions and destroying historic quays, Venice placed the most valuable properties along the waterfront to enjoy the open space and amenities of the Grand Canal. The reliance on vehicular traffic of European cities has resulted in traffic dominance but, for Venice, water transportation within the city has been maintained as the only alternative to walking.<sup>101</sup>



Figure 38: Venice, Italy

Source: Google Earth

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<sup>101</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 35.

## Infrastructure

The basic form of the city consisted of the two principle canals (former river estuaries), the network of minor canals, the pattern of small civic spaces (*campi*) and the pedestrian streets and alleyways (*calli*). There had been no previous Roman settlement to provide a grid structure and no vehicular traffic to demand easy bends and wide carriageways. Each parish was build up street by street around its church and campi. As the islands grew together, the streets were linked on reclaimed land or with bridges, without pre-alignment, causing offsets, twist, angles and dead ends.<sup>102</sup>



Figure 39: Venice River Corridor

Source: By Author

Dykes were used to reinforce existing islands and new island were created. The banks of the dykes were established with bundles of rushes and timber least affected by saturation. Buildings were constructed of timber rafts or on piles driven

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<sup>102</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 36.

into the mud. The 10-13 feet timber piles, mainly supporting the exterior walls have sustained many of the historic buildings for thousands of years.<sup>103</sup>

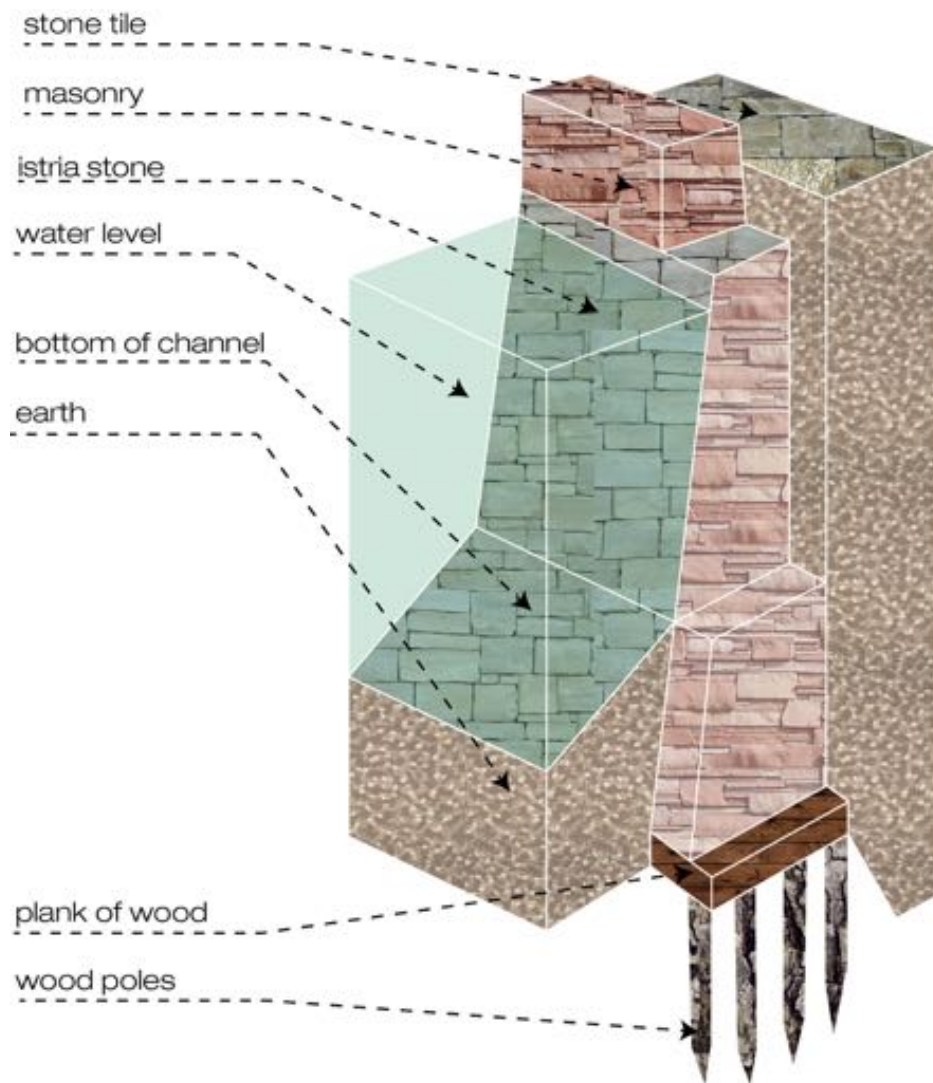


Figure 40: 3D Section of Piles Structure

Source: By Author

There have been multiple solutions proposed in order to accommodate for Venice's downfall. Solutions such as rising the side walks and plazas in the lowers areas, raising entrances to buildings, and moving up off the first floor within the hardest hit areas. Raising sidewalks have been the most invested strategy for Venice as the

<sup>103</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 35.

City Council was attempting to implement a 'Pedestrian Mobility Plan'. This plan involved erecting raised walkways along the lowest sections of the street to provide access to the main public buildings in the city center and to the public transit terminals with corrections to the mainland, islands, and coast. An extreme solution to the water level rise within Venice, Italy is the introduction to floodgates that would stretch across the three openings that connect the Venetian Lagoon with the Adriatic Sea (Lido Inlet, Malamocco Inlet, and Chioggia Inlet). This solution seemed plausible as the flood gate would rise as it recognized the water level rising in which it would hold back water level rising up to 6 feet. However the downfall of this solution is the ever-changing effects of time within 50+ years. This new inventive solution may be obsolete due to the increasing rates of sea level rise.



Figure 41: Flood Levels of Venice, Italy [Site]

Source: By Author

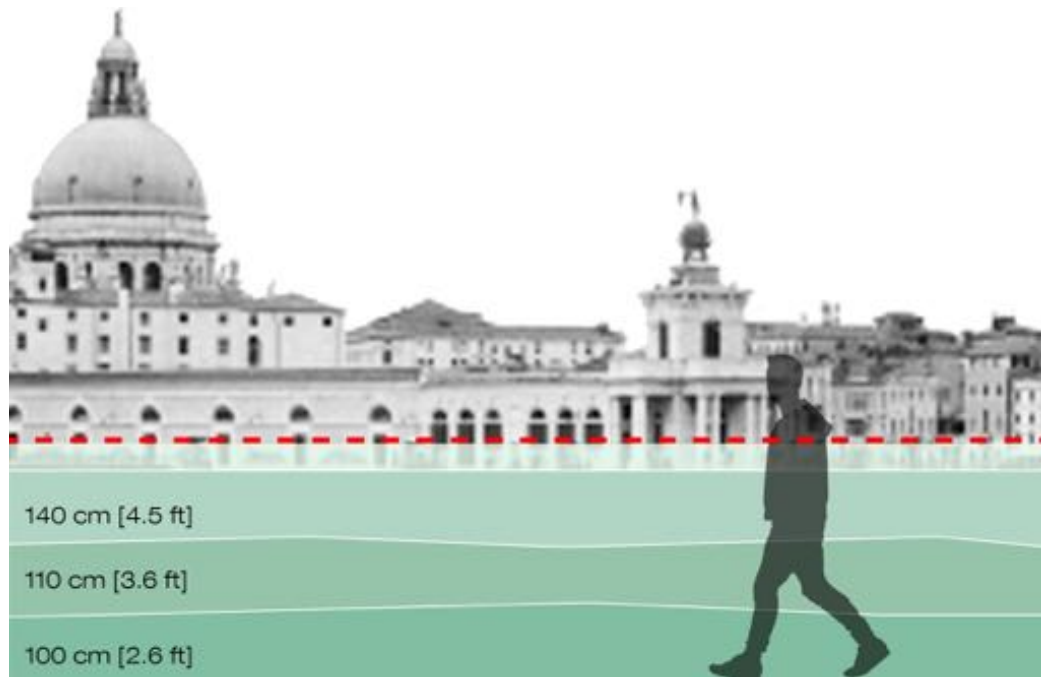


Figure 42: Water Rise [Section]

Source: By Author

This rise in sea levels were usually created by high tides caused by strong prevailing winds, storm, surges, and sever inland rain events. This rise has caused many Venetians to wonder if their city was sinking. After much research, the conclusion is that the city is sinking in a process called subsidence and sea levels are rising in a process called eustasy.<sup>104</sup>

### Water Experience

The water experience of Venice is very remarkable on how the urban fabric ties perfectly with water. The user within the spaces is a tectonic piece that transfers from water to land in an instant. This instantaneous activation is very strong in which the user does not even recognize the environment has changed from water to land. The harmonious connection was created perfectly in which the intimacy of water and land was perfected. Though water may be the problem, the city

<sup>104</sup> Bill Webb, "Venice: Rising Water, Sinking Land," *Landscape Architecture Study Tour* (2010), [http://people.umass.edu/latour/Italy/venice\\_water/](http://people.umass.edu/latour/Italy/venice_water/) (accessed April 19, 2015).

embraces the challenges and creates spaces in order to integrate human experience within the waters edge and the urban fabric.

The main artery of Venice, the serpentine Grand Canal, follows the line of the original *Rivo Alto* (or deep river) and the wider Guidecca Canal follows the outflow of the Brienta River. Early Venetians adopted the name *La Serenissima* (the most serene) for their city, as a token of its isolated strength and the harmony between man and nature.<sup>105</sup> The nature and harmonious connection may have been the name of the river within its past time, but the way that the site has developed overtime have created the human experience between land and water to be harmonious as well.



Figure 43: Gondola

Source: Aiofe O'Conner<sup>106</sup>

In addition to the line of elegant *palazzi*, the sides of the Grand Canal have jetties for the *traghetto* (ferries), consisting of waterside platforms decorated with trellises of vines and lamps. These identify points of contact between the calli and the wide serpentine waterway. The gondola, the principle form of transport in the canal,

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<sup>105</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 35.

<sup>106</sup> Aiofe O'Conner, 2015. IES Abroad, <http://blogs.iesabroad.org/aoife-oconnor/i-cant-believe-its-actually-happening/oconnor-venice-gondola-jpg-3/>



dates back to the eleventh century, and was adapted for the narrow winding waterways.<sup>107</sup>

### Urban Experience

The urban experience within Venice, Italy has been defined by the cultural influences within the architectural spaces. What makes this city different from the others are that the urban experience also incorporates water into the spaces. For example the lowest point of Venice is at Piazza San Marco where water levels reach from ankle to waist high. This however this does not stop users from walking within these particular areas. Instead they are embraced and interacted with. The spaces that occur between the waters edge and land were also influenced by the ever-changing roles of the economy within time. The close knit urban fabric developed beautifully through its conflicts of limited availability of land and modest open spaces. The compact spaces are dwarfed by the geometry of building facades but maintain human scale. There is no other city in which creates the possibility for urban spaces to be accessible to the pedestrian through the patterns of alleyways, canals punctured by bridges and small public spaces.



Figure 44: Piazza San Marco Flooded

Source: Franco Debernardi<sup>108</sup>

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<sup>107</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 39.

<sup>108</sup> Franco Debernardi, 2008. ZIMBIO, <http://www.zimbio.com/pictures/tg8IYzKC5z8/Venice+Hit+By+High+Tide/0oJuUhYyovY>



In correlation to the water, the urban fabric acknowledges its power and presence that the primary aspect of the structure is facing towards the water. The residential buildings reflected the various sections of society and the wealthy merchants favored the Grand Canal. The river facing *casa fondago*, which stated as a combination of residence and warehouse for early riverside trading, became the palaces of princes, as successful trading elevated the status of wealthy merchants.<sup>109</sup> It is the human experience inflicted by the power of water, which created the manifestation between the two dialogues.

The palaces that face the Grand Canal developed gracefully with open elevations with two story facades along the waterfront and ground floor porticoes for loading and unloading merchandise. The vertical accents of the Byzantine facades with window bays, slender columns and pointed arches give a unity and lightness, only interrupted by the wider archway of the waterfront entrances.<sup>110</sup> In contrast to the living spaces for the wealthy, ordinary house line the canals and *calli* (alleyways). These were fisherman houses where public work spaces that extend towards the waterways to promote laying out of nets and handling fish.

In contrast to the 'ideal city' plans of the Renaissance, which were unrelated to topography. Venice developed in relation to its unique maritime environment; its driving forces within the particular area rationalized the location of functions within the city.

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<sup>109</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 38.

<sup>110</sup> *Ibid.*, 38.

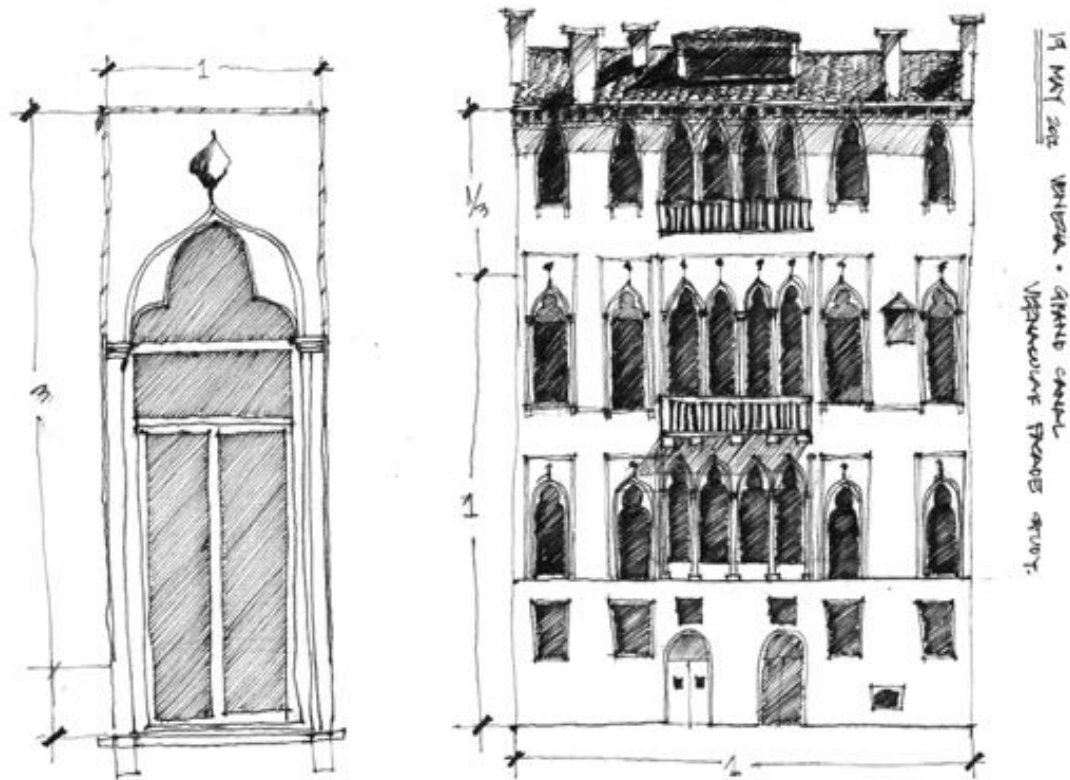


Figure 45: Venice façade towards water

Source: Wesley T.<sup>111</sup>

### Methodologies

The methodology in which human experience is created within spaces is a combination of all approaches. The methodology of first person is developed as each of the individuals whom reside in Venice is presented with memories and emotions within the landscape. Generations upon generations are influenced with the water culture in which first person memories are infinite. Existential approach is incorporated by the history and culture that Venice, Italy obtained throughout time. Human experience is targeted towards multiple groups of users with the urban fabric. Lastly hermeneutic experience is targeted especially within the water experience, the material palette and tripartite of the facades changed by the

<sup>111</sup> Wesley T, 2012. Sketchpals,  
<http://www.zimbio.com/pictures/tg8IYzKC5z8/Venice+Hit+By+High+Tide/0oJuUhYyovY>

influences of culture. The rawness of the materials as water chisels away amongst the facade creating textures for all the users to remember in memory.

### Material/Texture

The aesthetics of Venice, Italy is rich with culture in which influenced many styles of architecture throughout time. From the crisp modulation of the buildings to the dynamic of light reflected from animated water surfaces. There is no static force present through the journey of water within the urban fabric.

The water forms the base of the urban pattern. The building rise up into space and are reflected down into the water. Even during overcast and wet weather, the surfaces relate to the more somber color of the sea, and wet pavings provide a reflective surface compatible with still water.<sup>112</sup> The nightlife of Venice also provides for more experiences to be offered through the reflections of the water through the urban fabric. The reflections animated by the water, and sounds are channeled down the narrow canals.

The materials and textures provide the initiation of human experience through the hermeneutic process. This driving force is very strong to the Venetians, as they accept the rawness of the materials being exposed throughout time. However leaving the materials to deteriorate overtime presents an issue as it exposes the structural integrity of the building. In *Saving Venice from the Sea*, John Keahey states:

“Instead of merely washing against the impermeable marble that makes up the city's foundations, high waters are splashing with increasing frequency against the soft, permeable bricks that sit above the foundations. Saltwater from the Adriatic soaks into this brick, inching ever higher into the walls and creeping into the interiors, destroying frescos and other irreplaceable

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<sup>112</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 40.

relics. Unless they have been restored with new, waterproof brick, many of these buildings crumble imperceptibly."<sup>113</sup>



Figure 46: Salt Water Damage to Facade

Source: Ben Webb<sup>114</sup>

Bricks and tiles were the common building materials with Istrian stone (a white limestone) used for decorative door and window surrounds, balustrades and columns. From the Renaissance, stone was used to face important building and details were carved out of red marble from Verona. The limited open space led to the use of balconies and roof terraces for domestic chores.<sup>115</sup>

#### Procession

The procession of the users throughout individual spaces from the waters edge to the urban fabric is created so that no interruption occurred. Venice, Italy is one of the few cities that provide this uninterrupted experience. The driving force of the procession of the city is primarily focused on the Grand Canal of Venice. The water of the sea penetrates the confines of the urban setting; first it engages the wider expanses of the lagoon and the two principle canals. Then the procession leads towards the confined spaces of the secondary canals. The secondary canals proceeds towards the entrance of civic spaces in which connects to bridges and alleyways. This procession conveys the unique relationship from the waters edge to the urban fabric.

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<sup>113</sup> John Keahey, "Saving Venice From the Sea," *NOVA* (2002), <http://www.pbs.org/wgbh/nova/tech/saving-venice.html> (accessed April 19, 2015).

<sup>114</sup> Ben Webb, 2009. UMASS, [http://people.umass.edu/latour/Italy/venice\\_water/](http://people.umass.edu/latour/Italy/venice_water/)

<sup>115</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 38.

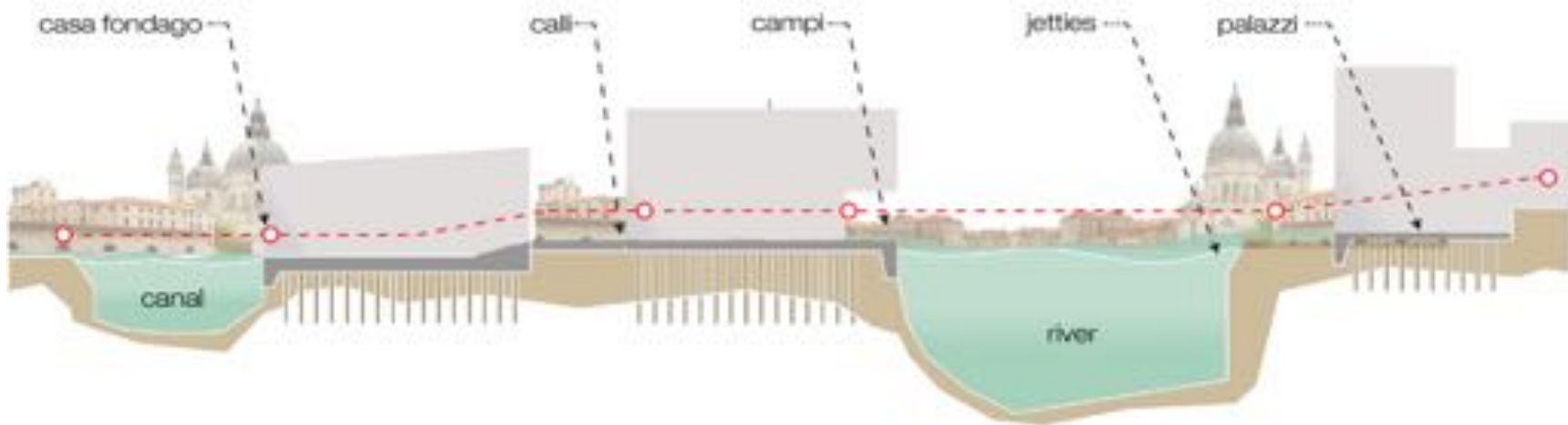


Figure 47: Procession Diagram

Source: By Author

## 6.2 CASE STUDY #2: HAMBURG, GERMANY [CANAL]

### Site

Hamburg, Germany became the second largest port recognized in the 90's. It was an opportunity for Hamburg to become the central hub for commerce and trade in Europe. In order to achieve this new central hub, Hamburg, Germany proposed a new development within the inner city port fringes. This proposal obtained development of urban structure and mix of uses creating 'Vision HafenCity'. The location of HafenCity aimed to develop amongst a series of canals, dikes and quays that served as a maritime industry for decades.

HafenCity is characterized by a diversity of uses and both large and fine grains. The mix of industries within and surrounding the development, and the uses by citizens enrich the space with an authenticity found throughout neighborhoods and about individual buildings. With the variety of program both public and private all infused through both experimentation in development and traditional practices, an overarching concept plan required major focal points for designers and planners to consider. These driving elements would be manifested through a number of design features found throughout the development and strongly relate to the planning approach set forth at the start, and were implemented with a mix of physical design elements and policy.<sup>116</sup> The role of the existing site also played a vital role on how designers and planners were to strategize location of public and commerce spaces. The rich history within the grain of the site provided a concept of preserving the maritime lifestyle where water is experienced and also appreciated.

### Infrastructure

The designed infrastructure of HafenCity is based on two driving forces: public spaces and water level rise. The two forces combined create the manifestation of the waters edge and the urban fabric in which displays human experience. The crucial roles of squares, promenades and parks within HafenCity linked various

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<sup>116</sup> Allan V. Co, and Mary Roderick, "HafenCity, Hamburg": 2, <https://courses.washington.edu/gehlstud/gehl-studio/wp-content/themes/gehl-studio/downloads/Autumn2010/HafenCity.pdf> (accessed April 26, 2015).

parts of the city and acted as contributing elements of the cityscape themselves. Public spaces are such an important role within HafenCity that nearly 20% of developed area was directed towards public space. The idea of the public use of the city also inspired the restructuring and appropriation of water surface for public use.

Within this language of public outdoor space, the new district had to navigate a new typography that considers emergency flooding levels and the means by which development would actually happen. To accommodate an eight meter variation of possible water levels, a system of plinths and bases allowing development to occur quickly, without larger operations. The plinths made development of the lowest floors possible, and design elements, such as watertight hatches, assured that they were watertight against high flooding. The plinths often took the shape of public spaces and promenades along the water, or squares in various locations. That echoed similar elements on a higher system of platforms, allowing the development as a whole to be experienced on two levels. These layers are connecting using a variety of stairs, walks, ramps and bridges, including those that connect HafenCity to the area and neighborhoods directly across the canal.<sup>117</sup>



Figure 48: Hamburg, Germany [HafenCity]

Source: Google Earth

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<sup>117</sup> Allan V. Co, and Mary Roderick, "HafenCity, Hamburg": 3, <https://courses.washington.edu/gehlstud/gehl-studio/wp-content/themes/gehl-studio/downloads/Autumn2010/HafenCity.pdf>

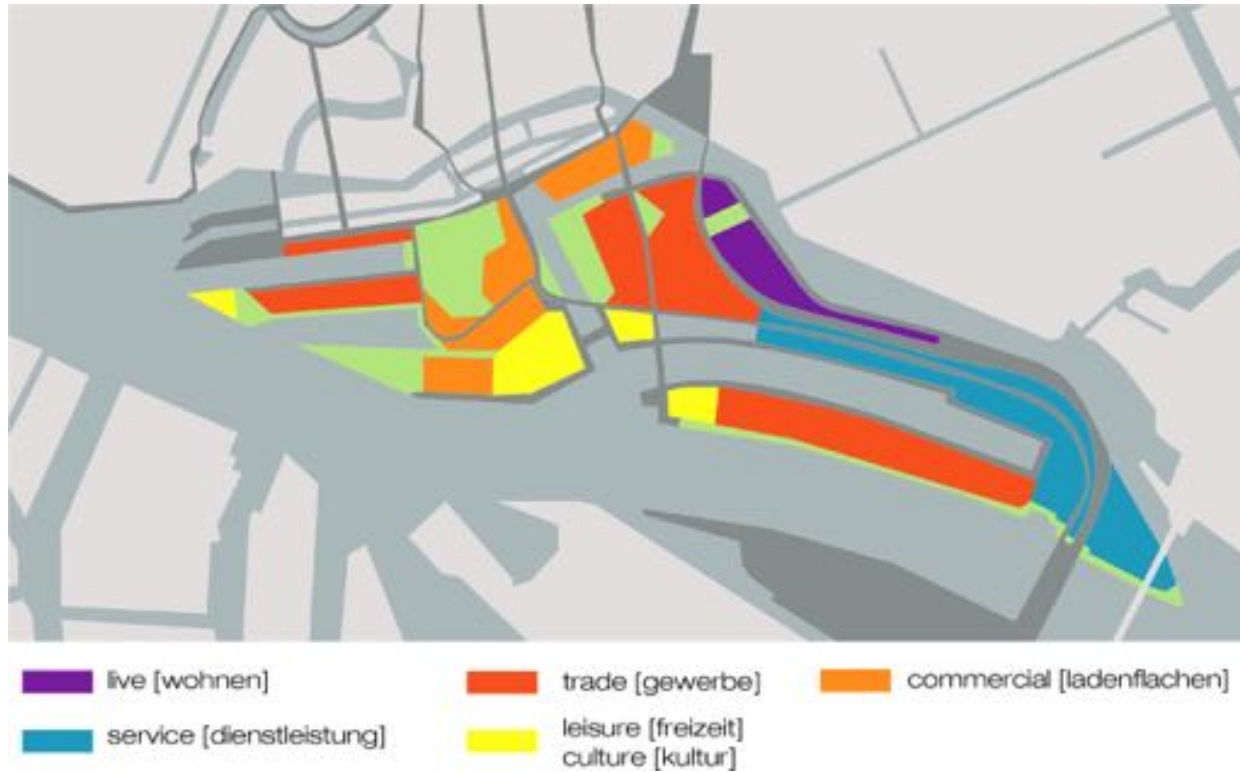


Figure 49: HafenCity, Hamburg [Site]

Source: By Author



## Water Experience

HafenCity understood the need to plan for the future by developing infrastructure and communities that make them resilient, strong and adaptable to the ever-changing environment. Coastal cities as discussed are vulnerable to the drastic environmental changes such as water level rise and large storm surges that inflict the edges and beyond. As Bruce Stutz on *Heat and Rising Seas* states: "Adapting to this reality has become a key part of future planning for London, Rotterdam, St. Petersburg, Tokyo, and Seattle, as well as low-lying cities across Asia"<sup>118</sup> HafenCity is a new waterfront city that is tailoring its design to the drastic changes in water rise and the public spaces adjacent to the waters edge. This experience is crucial to all users within the urban fabric as the surrounding environment changes per season. Due to the cohesive design between the urban fabric and waters edge, the user now has a deep appreciation towards the two contrasting human experience of water and land.

Hamburg, Germany unlike other regions inflicted with water fluctuation on the coastline appreciates the movement of water onto the urban fabric. Appreciating a destructive force amongst the city combines the acknowledgement of the environment and accepting the ever-changing movements rather than fortifying and rerouting. Rather than build new dikes or canals developers incorporated flood resilient and adaptive infrastructure providing residents with waterfront access.

The intensive reciprocal interaction between land and water can be regarded as unique, for HafenCity will not be surrounded by dikes, nor cut off from the water. With the exception of the quays and promenades, the total area, i.e. streets, parks and development sites will be raised to 7.5 to 8 meters above sea level. This creates a new, characteristic topography, also maintaining access to the water and emphasizing its typical port atmosphere.<sup>119</sup>

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<sup>118</sup> Bruce Stutz , "New York City Gird Itself for Heat and Rising Seas," *World Changing* (2009), <http://www.worldchanging.com/archives/010492.html>

<sup>119</sup> "HafenCity Hamburg," *HafenCity Hamburg Projects March 2010: Insights into Current Developments* (2010): 5.

HafenCity has three design strategies towards water level rise in correlation to experience: protect, renew, and re-tool. Kristina Hill a landscape architect and planner suggests that we must use these three strategies in order to take the current situation we have and work with the changes rather than against it. She believes that we must take advantage of our natural sources and take the surrounding urban fabric and use it towards our own advantage rather than against us. Kristina Hill *on Managing the Effect of Climate Change* states:

“The best approach I know of can be simply described using three categories of actions: to protect, renew, and re-tool. That means, to protect the most vulnerable people and places, especially the ones that offer the greatest future diversity and flexibility; to renew our basic resources, like soil fertility, water quality and quantity, air quality, and human health; and to re-tool, altering urban systems - buildings, transit, landscapes - to use less energy”<sup>120</sup>

The three strategies in which promotes water to be accepted into the urban fabric instead of neglected is very intriguing as it features buildings, public spaces, bridges, and landscape designs in a harmonious connection to water. This harmonious connection promotes water to be in presence near the suggested spaces and acknowledged as part of the design feature. Hamburg will allow flooding, but designed a major new part of the city to be resilient to high water, with water-proof parking garages, a network of emergency pedestrian walkways 20 feet above the street, and no residential units at ground level. Even the parks in this new Harbor City district are designed to withstand battering by waves and storm surge, either by floating as the waters rise, or by incorporating lots of hard surfaces that only need to be washed off when the waters recede.<sup>121</sup>

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<sup>120</sup> Amanda Reed, "Managing the Effects of Climate Change," *World Changing* (2010), <http://www.worldchanging.com/archives/011527.html>

<sup>121</sup> Ibid.



Figure 50: Water Rise [Section]

Source: By Author

## Urban Experience

The urban experience for HafenCity is important, as it is an island surrounded by land offset by canals and rivers. This presented a situation where the link of transportation and movement of users within the island towards the outer city must be fluid and connected. This challenge also provided considerations onto how to extend such a network to a site with such topographical variation. As HafenCity has the advantage of taking the full proximity to the center of Hamburg it is still viewed and considered isolated. Due to the view of HafenCity being an island developers had to realize the importance of developing connections to and from the area, as well as within the city itself in order to breakthrough the mentality of an island appearance.

To realize the desired richness in the development, HafenCity was laid out with a very dense network of routes to accommodate both pedestrians and bicyclists in addition to motorized transport. Unlike many developments however, these non-motorized users were prioritized: pedestrians have two and half times more kilometers of pathway than cars. Further, 70% of foot and cycle paths are separated from motorized traffic. Considering footpaths and cycle routes from the start, with flexibility for addition and densification over time, distances for non-motorized users are short, making everything within and outside of the development easy to reach. Further consideration for that on foot is evident in the many public or publicly accessible paths through private building plots.<sup>122</sup>

To accommodate such a vision of priority for non-motorized users, HafenCity had to juggle policy requirements for parking capacity. Developers wanted to encourage walking and cycling without making it prohibitively difficult to access the site using private or public vehicles within the site. In this case, the advantages of the double parallel infrastructure within the site and to the mainland area north of the island (via 25 new or renovated single or double-level bridges) greatly aided the

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<sup>122</sup> Allan V. Co, and Mary Roderick, "HafenCity, Hamburg": 3, <https://courses.washington.edu/gehlstud/gehl-studio/wp-content/themes/gehl-studio/downloads/Autumn2010/HafenCity.pdf>

design. For example, parking requirements were usually met through basement level facilities, accessible at restricted points, and separated from pedestrian thorough-fares. This allowed for minimal surface parking, further prioritizing non-motorized users in outdoor spaces, and provided a safe utility for flood-protected levels, which were generally not desirable for habitation.<sup>123</sup>

### Methodologies

The methodology in which human experience is presented is through the existential and hermeneutic approach. The rich culture and history of the site was promoted by maritime civilization where Hamburg, Germany was an area of trade. Due to the richness of water being its primary driving force, planners proposed to accept water back into the site. Accepting water into the site creates the existential connection where users are inflicted with human experience through groups. The promotion of



Figure 51: Brick facade

Source: iphotography\_<sup>124</sup>

public spaces such as harbors, water front promenades, terraces, streets, and walkways promotes the activation of human experience as they are adjacent to the waters edge that rise seasonally due to weather changes. The nodes within the urban fabric are the instruments that ignite the human experience.

The hermeneutic approach is proposed through the brickwork of the new mixed use buildings that line along the waters edge. The technique to incorporate brickwork relates to the existing old structures on site. The

brickwork also relates to the old warehouse across the canal where a new grand

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<sup>123</sup> Allan V. Co, and Mary Roderick, "HafenCity, Hamburg": 3, <https://courses.washington.edu/gehlstud/gehl-studio/wp-content/themes/gehl-studio/downloads/Autumn2010/HafenCity.pdf>

<sup>124</sup> Iphotography\_, 2007. Flickr, <https://www.flickr.com/photos/alpha100k/365670012/>

hall will be built. Complimenting rather than contrasting against the historical urban fabric as discussed in earlier chapters is suggested as it does not take away from the richness of the site. The user engages the hermeneutic experience as they walk through the spaces between the new and the old, the cohesiveness between contemporary and historical work in harmony.

### Materials/Textures

The aesthetics of HafenCity in Hamburg, Germany presents a modern contemporary design with newly innovative landscape, which promotes water into the site. Prior to development, existing brick structures typical to pre-war German building lined the northern area of the site, while the southern area lay unused. Within the newly design buildings the influence of brickwork in the old structures was kept. The façade facing towards the waters edge incorporated modern brickwork to compliment the old warehouse across the canal. The connectivity of



Figure 52: Grand Hall

Source: Rhies Tarzke<sup>125</sup>

materials within the old and the new created human experience as the users transitions in procession from the new urban fabric - waters edge - surrounding existing urban fabric.

The neighboring existing warehouse 'Kaispeicher A' obtains old brickwork aesthetics from pre-war Germany. As stated, the newly designed building obtains

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<sup>125</sup> Rhies Tarzke, 2007. Elbphilharmonie, <http://www.elbphilharmonie.de/elbphilharmonie-hamburg.de>

the brickwork style with a contemporary twist to its façade. The texture and material of the existing urban fabric is greatly appreciated due to its history that the designer decided to build on top of the warehouse rather than demolish the old. The proposed project is a grand hall named 'Elbe Philharmonic'. It incorporates a glass structure that is built upon the massive red brick construction of the former warehouse and rises up to 360 feet.

### Procession

The procession of users throughout the spaces from the water's edge to the urban fabric is broken up into segments. The cause for the procession to be broken up into segments is driven by the forces of water as they fluctuate. Although the procession obtains segments within the journey, a harmonious movement is still present. The harmonious movement is caused by the driving forces of water in which interlace each segment into one. The penetration of water within the urban fabric is the staple, which creates the network of movement within the site. The production of human experience is created within the procession of the 5 levels of public spaces: water, waterfront promenades, terraces, streets, above streets.



Figure 53: Waterfront Promenade

Source: HafenCity<sup>126</sup>

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<sup>126</sup> HafenCity, 2010. ELBE&FLUT, <http://euf.de/referenzen/design.html>

Water public spaces produces floating docks that are accessible at sea level which changes twice daily. This dual fluctuation of water daily creates two different experiences within this particular public space. The pontoons of the Traditional Ship Harbor provide a level of urban perception, which rises and falls with the tide. Since the water level of the River Elbe varies twice daily by more than 3 meters, depending on the ebb and flow of the tide, perception of the quarter is constantly changing. The relationship here between water level, quay walls and edges, pontoons, watercraft and buildings is continuously shifting.<sup>127</sup> Waterfront promenades provide the embankment for walking and cycling that are 13-14 feet above sea level. These embankments flood as water rises towards the steps creating a secondary waters edge. Created terraces named 'The Magellan' and 'Marco Polo' provide the largest public squares of the city. These terraces are designed creatively as they interlace public thoroughfares from the waterfront promenades to the street level. The streets lined adjacent to buildings are build on artificially raised, flood protected bases at 24-26 feet above sea level. Above streets public space in correlation to street space are in higher elevations, which produce more occupiable spaces. These spaces obtain residential units, which start 1 story above sea level.

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<sup>127</sup> Amanda Reed, "Managing the Effects of Climate Change ," *World Changing* (2010), <http://www.worldchanging.com/archives/011527.html>





Figure 54: Procession Diagram

Source: By Author

### 6.3 CASE STUDY #3: SAN ANTONIO, TEXAS [RIVER]

#### Site

San Antonio, Texas in comparison to the previous case studies is interesting as water fluctuation within the waters edge is not the existing issue. The topic to be discussed and analyzed is the manifestation of human experience throughout time alongside the Paseo del Rio River. The Paseo del Rio connecting to the San Antonio River, on the southeast corner of Edwards Plateau, Texas is one of the few US cities that convey an historic legacy. The Paseo del Rio River also known, as the Riverwalk is an important case study alongside Venice, Italy and Hamburg, Germany as the river epitomizes the cultivation of human experience. The human experience may be found walking along the river itself bearing ships, restaurants, markets, and hotels. Creating an influx of activities and nodes between the waters edge and the urban fabric interlaces the two contrasting forces.



Figure 55: San Antonio, Texas [Riverwalk]

Source: Google Earth

The original form of the San Antonio River was a spring fed meandering watercourse that periodically flooded. As the city grew the periodic flooding caused havoc in 1921 a grim forecast became reality with loss of life and damage to property. The scenic value of the river to the city was nearly lost when the authorities proposed to remove the bend in the river to pave over the downtown

section. Fortunately the San Antonio Conservation Society convinced the City Council of the intrinsic amenity value of the river loop.<sup>128</sup> As the River Walk only takes up 2% of downtowns land area. The 10-mile river corridor supplies majority of tourism, economy, market places, cultural facilities and important historic areas.

### Infrastructure

The flood control project that was adopted provided for a bypass canal with a floodgate and two river dams designed to cut off the horseshoe bend from the main stream during high-water periods. Walkways, staircase accesses from street level and arched footbridges were constructed. In 1964 a municipal improvement bond was issued that provided finance for improvements to the river bend, encouraging private owners to build river front properties.<sup>129</sup>

In comparison to the previous case studies, waterfront spaces were pushed upon to provide the experience alongside water, unlike Venice and Hamburg where creating water front spaces were accepted rather than enforced. The enforcement by the municipal of creating spaces near the water corridor benefited the Riverwalk in the long run.

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<sup>128</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 82.

<sup>129</sup> Ibid., 83.



Figure 56: San Antonio River Corridor [Site]

Source: By Author

### Water Experience

The horseshoe like movement of the river creates a water experience valued by the users whom walk alongside its edges. Due to the river fluctuation being manipulated by floodgates and bypass canal, water penetration onto the urban fabric is lost.

The disconnection of water and the urban fabric limits the rise in intimacy between the two features and suppresses human experience. It is through the help of markets and festivities in which promotes water experience throughout the journey.

In ancient Greece, public officials enforced commerce alongside water features just as the City Council of San Antonio promoted. In ancient Greece there were designed *agoras* (market places) which serves as a center to trade, as well as a center of political, judicial, festive, and civic festivities. Each craftsman was assigned special areas to stand and sell. V.A. Mund in *Open Markets* states: "Permanent shops for the sale of jewelry, clothing, cutlery, perfumes and more expensive goods were generally located in the colonnades adjacent to the market place."<sup>130</sup> In ancient Rome, the *forum* (meeting place) was an exchange center where users would sell and exchange goods. These markets would occur daily and once a year festivals were created dedicated to religious holidays.



Figure 57: Social markets near waters edge

Source: Riverwalk<sup>131</sup>

The use of barges as a mechanically driven transportation system was highly influenced by the gondolas used in Venice, Italy's canals. The barge transports 10-15 users along the river corridor giving them a mobile panoramic view of the surrounding environment. These wide barges also provide spaces devoted to dining and music in the evenings, which compliment the character of the riverside restaurants. The water experience is created through the reflections of the marketplace lighting to the surface of the river. Towards the night evening lighting

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<sup>130</sup> V.A. Mund , *Open Markets* , (New York: Harper & Borhters Publishers, 1948), 6.

<sup>131</sup> Riverwalk," 2015. Paseo del Rio, <http://www.thesanantonioriverwalk.com>

occurs and music embellished terraces are projected from a view of empty shopping streets creating an exclusive ambience.<sup>132</sup>



Figure 58: Movement of water from upper level

Source: By Author



Figure 59: Movement of users from upper level

Source: By Author

### Urban Experience

The Riverwalk is a beautiful mixture of texture and color provided by plant material, multiple paving patterns, reflections of water, culturally influenced facades, fountains, waterfalls, and buildings. Although 15-20 feet below street level, it remains quiet and cool. The range of temperature drops 10 degrees cooler from street level transitioning to the Riverwalk. The placement below street level creates a human experience where one feels an escape from the busy city. The psychological effects created due to the changes in the material palette from concrete and steel to organic foliage and whispering waters evokes the experience of remoteness.

Sinclair Black in *San Antonio's Linear Paradise* states:

“A strong sense of enclosure prevails at the river level. The primary space definers are 60 feet cypress trees that provide vertical scale while defining the width of the linear space. Frequent bridges, 10 to 18 feet above the walls, set a smaller vertical scale and mark linear distances with their emphatic shadows. The bridges also frame distant views of the river creating a strong sense of anticipation, even mystery.”<sup>133</sup>

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<sup>132</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 87.

<sup>133</sup> Sinclair Black, "San Antonio's Linear Paradise," *AIA Journal*, no. July (1984): 30,





Figure 60: Public spaces near water

Source: By Author



Figure 61: Playfulness near water

Source: By Author

The strong sense of enclosure, which provides a landscape resort, is now manifested within the users experience. The user now being the extensive tectonic piece towards its surrounding environment where the body is always in contact throughout the journey is the exact approach towards Maurice Merleau-Ponty view of human experience.



Figure 62: River infiltrating adjacent structures

Source: By Author



Figure 63: Transition of water within structures throughout spaces

Source: By Author

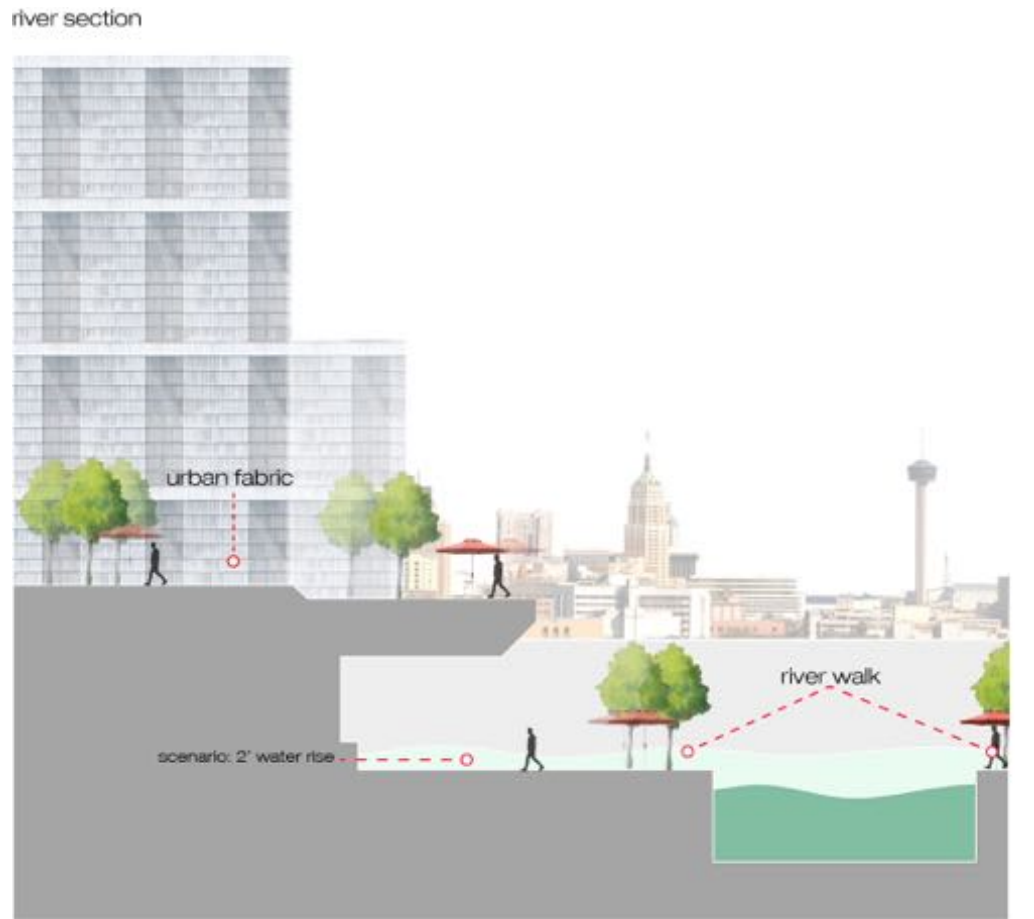


Figure 64: Riverwalk Section

Source: By Author

### Methodologies

The methodology in which human experience is presented is through the combination of first person, existential, and hermeneutic approaches. The Riverwalk in San Antonio, Texas culminates all three approaches as the case study was derived from historical and cultural influences. Just as Venice, Italy the Riverwalk encompasses the value of time within the public spaces, materials, and styles. The first person approach is achieved through the history of the site, the Riverwalk cultivates many individual memories for those who work or play within the interlaced spaces. Existential approach to human experience is achieved through the



influence of market places and riverboats. Incorporating memories with experiences already valued by groups in Greece and Rome are resembled within the journey of the Riverwalk. Lastly the Spanish style architecture and facades throughout the length of the river exemplify Hermeneutic approach. Failing to infill the river to create more building space for the urban fabric above displays the evocation of emotion and human experience through the natural landscape.

### Material/Textures

The production and presentation of various materials was yet another enforcement in which the City Council of San Antonio promoted. This enforcement was created in order to protect the historical dignity and to prevent contrasting elements to be



Figure 65: Materials on Site

Source: By Author

design on a historic driven site.

It is the function of the River Walk Advisory Commission to establish guidelines to preserve and protect the distinctive character of the river, to advise the city authorizes concerning construction near the river bend. The design recommendations encourage the use of traditional materials (brick, native limestone, painted brick, stucco and Mexican masonry products). The recommendations make suggestions for paneled or carved wood or painted steel windows,

bronze aluminum in preference to natural aluminum for storefronts. For landscaping, native trees (oaks, elms) were used in preference to cactus and palm trees, which also suggest an attempt to maintain a continuity of character.<sup>134</sup>

### Procession

The procession of the site occurs differently compared to the previous case studies as water does not fluctuate throughout the seasons nor does it ever flood. Due to the static water levels in elevation, creating a journey within the interlaced features

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<sup>134</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 86.

resulted in permanence. The design for permanence tailors to the notion that the design does not have to adapt nor adjust to the future environmental changes.

At the same time, the river walks, restaurants, terraces and sheltered landscaping are visible from the bridges and sections adjoining street pavement. The buildings enclosing the river corridor are varied; landing terraces historic structures, institutional buildings, or an open-air theater.<sup>135</sup>

The procession within the site occurs through 5 segments: street, bridges, staircase, corridor, and marketplace.

- Street: The user is engulfed within the tall structures of the city.
- Bridges: Transitioning off the street, bridges are markers for staircases to transition.
- Staircase: Transitioning from street level to the river corridor the interlacing effects are introduced.
- Corridor: Landing 25 feet below street level the user enters the corridor in which follows the waters edge.
- Marketplace: Cultivates the final interlaced segment in which water and the urban fabric mesh harmoniously. Through this last segment human experience is achieved.

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<sup>135</sup> Anthony Wylson, *Aquatecture: architecture and water*, (London: Architectural Press, 1986), 87.

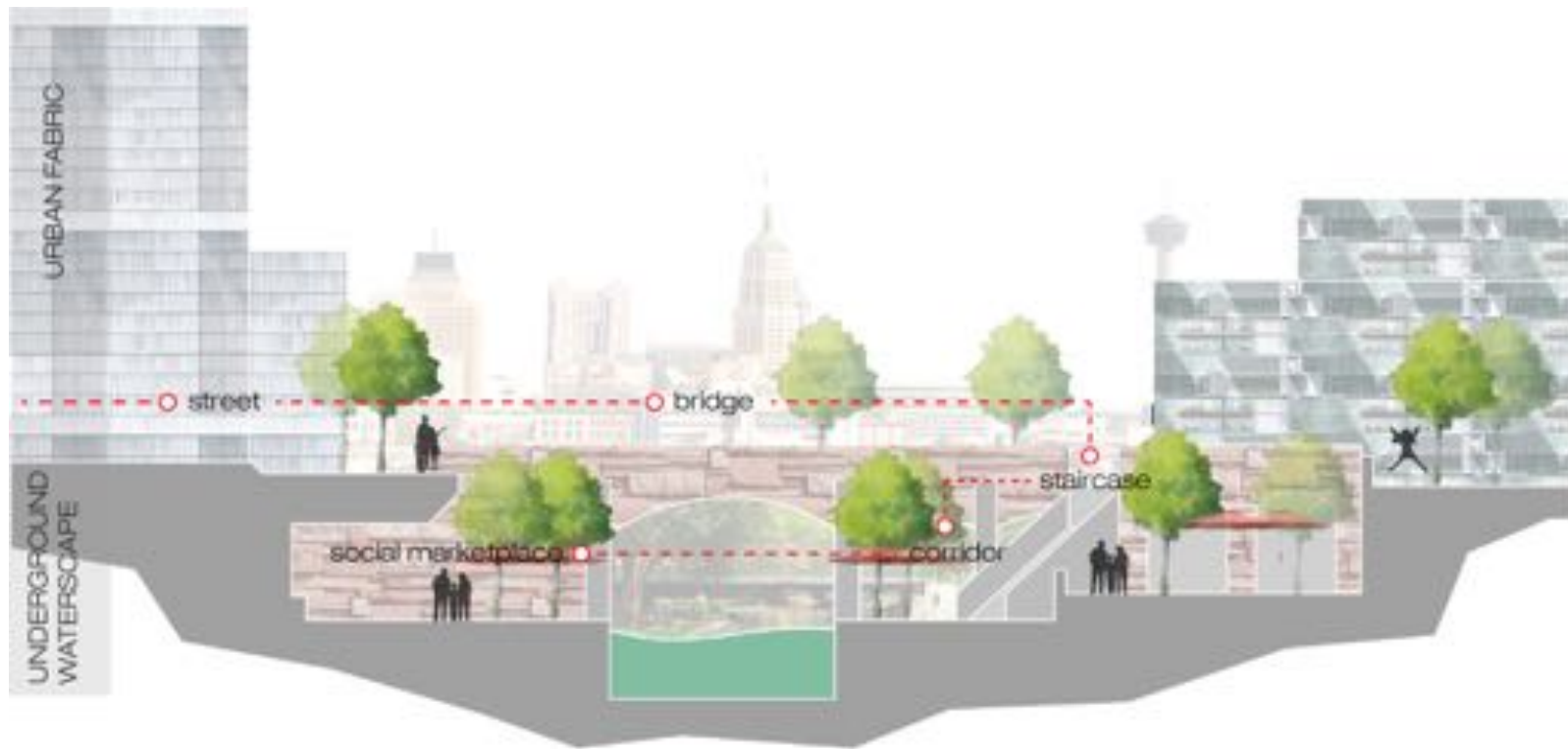


Figure 66: Procession Diagram

Source: By Author

### Case Studies implementation

The implementation of the case studies analysis is another primary benefactor of the design drivers and decisions towards the micro site design. The micro site design will focus on the spatial adjacencies between social nodes, which will promote human experience. Understanding the case studies and threading ideas towards the micro site design will help organize ideas and filter the solutions that best fits the situations and future issues that Waikīkī will present.

Venice, Italy	Hamburg, Germany	San Antonio, Texas
<ul style="list-style-type: none"><li>○ Transportation</li><li>○ <i>Casa Fondago</i></li><li>○ <i>Calli</i></li><li>○ <i>Campi</i></li><li>○ Open spaces/plaza</li><li>○ Water acceptance</li></ul>	<ul style="list-style-type: none"><li>○ Cultural Space</li><li>○ Housing</li><li>○ Waterfront Promenade</li><li>○ Terrace</li><li>○ Water acceptance</li></ul>	<ul style="list-style-type: none"><li>○ Social markets</li><li>○ Infiltration of water within spaces</li><li>○ Acknowledges second level</li><li>○ Water acceptance</li></ul>

Venice, Hamburg and Texas, each location having their own way of living with water will provide a starting point to mold within the design. To take and replicate their solutions is not the goal, rather it is to analyze and observe how these solutions towards water and the urban fabric were implemented and how it provided life through the site.

The strengths that Venice, Italy obtains in the harmonious design of water and the urban fabric are the usage of transportation, water front living spaces (*casa fondago*), water front social nodes (*calli*), dispersed civic spaces (*campi*), and the use of open areas/plaza. The strengths of Hamburg, Germany focused on cultural spaces, waterfront promenades, housing, and the use of terraces. Lastly the strengths of Texas, United States (San Antonio) are the usage of social markets, infiltration of water within adjacent structures, and it acknowledges the urban fabric above.

What does this entirely mean towards the design proposal of Waikīkī. The building foundations of the discussed cities all have their ways to deal with water within the

urban fabric. It will be vital to include what is already succeeding within other cities and learn how to implement them within the future of Waikīkī. It is also important to learn and possibly use these strategies as water could infiltrate the urban fabric and cause issues in infrastructure. The usage of water transportation in the already small-scaled Waikīkī

peninsula will provide foot traffic within areas of interest and will begin to move big densities of population from one side of the district to the other. Providing housing and gathering areas amongst the waters edge will create a source of life and embark on a change of social activities regarding water that is only practiced currently within the shores of the urban fabric. Water infiltrating into the urban fabric will then alter and move the activities towards to the city. Lastly intertwining the urban and water realm with ways of circulation between the two entities will provide a link towards the existing and proposed. An example of this achievement is obtained in the Texas, United States case studies where the urban fabric and waters edge are on different elevations, however bridges and two-story restaurants promoting vertical circulation intertwine the two elements together.

An interesting design feature to discuss in relation to the researched case studies is the ways of entry provide by the water corridors. All three case studies are different by the water source: river, canal, and ocean, therefore the circulation and entry points differ in each situation. As we take a look at Venice, Italy we see that there are multiple entry points as the ocean surrounds it. The primary canals then greet the ocean, which then leads towards secondary canals and alleyways. This situation then provides multiple entry points and scattered gathering nodes, which may lead to the loss of way-finding and scattered human experience within the site.

In Hamburg, Germany we see that there are three entry points that lead to the gathering nodes of the urban fabric. Reviewing the case studies, HafenCity in Hamburg, Germany is built upon existing harbor areas that were created; therefore multiple entryways were not priority due to security. This case study obtaining three entry points then provides the opportunity to create different identities per entry

point. For example 'Entry A' leads towards housing, 'Entry B' leads towards recreation, and 'Entry C' leads towards commercial. This tertiary entry point leads to a more ordered circulation within the urban fabric and waters edge.

Lastly in San Antonio, Texas, the Paseo del Rio (River Walk) provides two entry points. The canals create the entry points, which connects to the river on the upper and lower segments. The dual entry points also provide an order towards circulation of users within the site. The implementation of social gathering nodes is then adjacent towards the movement of water providing continuous human experience from beginning to end.

## CHAPTER 7: INTRODUCTION TO WAIKĪKĪ

HO'OMOE WAI KAHĪ KE KĀO'O

*Let all travel together like water flowing in one direction*

*-Mary Kawena Pukui, Ōlelo No'eau*

### 7.1 WHY WAIKĪKĪ ?

It is essential that this project's design site possesses not only a connection to culture and history, but also holds the potential for building new interlaced spaces between the existing urban fabric and the water's edge. The space also has to have the capacity to incorporate a journey through experience—human, water, and urban. The location within Hawai'i that possesses all the desired characteristics falls within the district of Waikīkī.

The roots of Waikīkī carry, deep within, a rich, textured history of culture and memory. This is the primary driving force behind the human experience aspect of this project's design. The analytics of construction in Waikīkī have been concisely documented since 1959, after Hawai'i received statehood. Fortunately, a majority of studies that focus on the development of urbanization in O'ahu use Waikīkī as the subject, due to its exponential development over a relatively short period. This provides the opportunity to design and create spaces with the support of analytical documentation dating back to 1959. The information gathered on the historical infrastructure within 1959 – present is highly beneficial as:

- A majority of the physical foundation for today's Waikīkī was laid during this time.
- The government agencies that control Waikīkī changed hands over the years.
- After statehood was received in 1959, the growth of technology and globalization created new sources of funding and mass tourist markets that profoundly altered the nature of tourism and the face of Waikīkī

## 7.2 DESCRIPTION OF WAIKĪKĪ

Since the 1800s, Waikīkī has experienced drastic changes in land divisions and place names. O‘ahu’s original landscape was divided into Hawaiian subdivisions called ahupua‘a; these ran mauka to makai, or mountain to water, to ensure a balanced division of usable resources for those within each subdivision. Today, Waikīkī and its surroundings can be surveyed and viewed as the Waikīkī peninsula. Portions of the Kaimukī, Mānoa Valley, Pālolo Valley, Mānoa, Mccully, and Mō‘ili‘ili districts border the peninsula. While the characteristics of these subdivisions have changed over time due to urbanization, they continue to influence each other.

The decision to make Waikīkī the design site carries with it several advantages. The first advantage is the site’s connection to history; Native Hawaiians thrived in this region and a great deal is known about its history and culture. The Waikīkī ahupua‘a was cultivated and originally built up by the Native Hawaiians. Waikīkī contained homes and gathering sites for the ali‘i, the Native Hawaiian ruling class. Due to its importance in the lives of the ali‘i, one of the first major roads was created that connected the Waikīkī peninsula to the town of Honolulu.

The second advantage in choosing Waikīkī as the design site relates to its proximity to downtown Honolulu. Once Route 92, locally known as Ala Moana Boulevard, was built, the distance between the two places became less of an issue; the movement of users between the locations could happen quickly and therefore the population was able to settle more widely. The land between Waikīkī and Honolulu did not have any poor access to and from as the ground levels of Waikīkī are close to flat. The Waikīkī district was built on lessons learned from the failures that occurred during the creation of the Kewalo Basin/Harbor in which planning; financing, drainage, and the introduction of utilities were not managed well.

During the 1920s the government upgraded the docks of Honolulu Harbor to accommodate large passenger ships.



The same political and economic hierarchy that owned land in Waikīkī also engaged in civic boosterism promoting travel to Hawaii from the United States mainland through such successive agencies as the Hawaiian Bureau of Information, the Hawaii Promotion Committee, and the Hawaii Visitors Bureau.<sup>136</sup>

Around the same time, the Honolulu airport was built, through both government grants and private investments. Waikīkī, just a few miles away, then became the target location of the tourist trade and the new home to hotels such as the Moana Hotel and the Royal Hawaiian Hotel.

Because the Waikīkī peninsula is relatively small (a little over one square mile) and foot traffic is a practical form of travel, Waikīkī became an ideal location for many objectives including residential and vacation apartment buildings, tourism-related businesses, hotels, restaurants, shops, and beachfront properties. Due to its high population density, Waikīkī and its immediate surroundings have become prime beneficiaries of Honolulu's regional park system and include Kapiolani Park, Ala Moana Park, Ala Wai Promenade, Ala Wai Park, Kuhio Beach Park, and Fort DeRussy Park.

### 7.3 EVOLUTION OF WAIKĪKĪ

Waikīkī's journey of evolution has taken it, over several centuries, from its natural swampy, mainly agricultural landscape to today's altered account, which is driven by man-made structures and tourism. The history that has shaped Waikīkī is central to this project as creating an interlaced space that provokes human experience must incorporate both the space's history as well as what is yet-to-be. The foundation of culture and history can be used within the design aspect of this project to direct and portray both tangible and intangible values. The ability to create memories and human experience with the designed space relies heavily on Waikīkī's evolution. The following seven points define chief aspects of the evolution that provide insight into this project's design:

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<sup>136</sup> Richard W. Collier, *Waikiki: A Study of Invasion and Succession as Applied to a Tourist Area*. (Hawaii : University of Hawaii, 1952), 46.

1. Waikīkī began as a rich agricultural district that was fed by waters from the Pi'inaio, Āpuakēhau, and Ku'ekaunahi Streams that drained at Mānoa and Pālolo Valleys. Area residents supplemented their diets with fish caught offshore. This productive area served as the seat of royal power on O'ahu during the periods of O'ahu's independence from other Hawaiian islands. After contact with western explorers, the arrival of missionaries, and the consolidation of the Hawaiian Kingdom, King Kamehameha I constructed a series of increasingly westernized structures at Helumoa. A Congregational church and school were also built near the present site of the International Market Place and the Princess Ka'iulani Hotel.
2. Improvements in land transportation from downtown Honolulu allowed the kings of Hawai'i, in the late 1800s, to create even more elaborate country homes along the beach at Waikīkī. Many royals, including Bernice Pauahi Bishop, Queen Lili'uokalani, Queen Kapi'olani, and Princess Ka'iulani had large country properties in the area. By 1888, a number of private citizens with wealth and leisure time had also built a series of prominent homes along the shoreline.
3. In 1888, the first private residence was converted into a small private hotel; the Macfarlane residence near Diamond Head was opened as the Park Beach Hotel. This began a trend among private owners; the Lewers and Princess Ka'iulani homes were also later converted into hotels. The Honolulu Seaside Hotel, located at the site of today's Royal Hawaiian Hotel, pioneered the use of cottages built specifically for the hotel trade. In 1901, the Moana Hotel opened, reflecting the efforts by developers and civic boosters to tap into the larger market of sophisticated tourists transported to Hawai'i by the new ocean liners.

4. Streetcar access led to an increasing demand for house lots; the Waikīkī Reclamation Project provided both the dry land and beginnings of land ownership redistribution to provide those house lots. Single-family homes, bungalows, and courts became the most common types of residential construction. The large royal estates were either broken up and sold (e.g., Princess Ka'iulani's home site and Ainalahau) or leased (e.g., Queen Lili'uokalani's estate and the Bishop Estate Helumoa properties). The Congregational church and school were moved from their sites along Kalākaua Avenue elsewhere. Small local business began to pop up across from the beach in order to serve both the residential and tourist clientele.
5. O'ahu's increasing population and the growth of tourism provided the economic incentive in the 1920s and 30s to build the Waikīkī Amusement Park, the Territorial Fair Grounds (today's Ala Wai golf course), Gump's, and the Kuhio Theater on previously vacant land. The Waikīkī Theater was erected across from the new Royal Hawaiian Hotel. Another golf course was later built at Wai'ala'e to accommodate guests of the Royal. By the 1930s, construction of bungalows and courts outpaced single-family homes, and two-story construction started to become more common.
6. Improvements in air travel to the islands from the US mainland laid the foundation for mass-market tourism. Furthermore, statehood in 1959 greatly eased access to capital markets for developers seeking to build mega structures capable of accommodating mass-market tourism. Waikīkī suddenly became vastly more integrated into the world economy and many influential economic decisions began to be made elsewhere. The local government made great efforts to provide new jobs and diversify the economy through the increasing tourism, moving away from its former dependence on agriculture.

7. Private and public entities increasingly struggled between the desire for economic expansion and maintaining Waikīkī's charm, or sense of place. The result was an increase in legislation that limited the location and types of construction allowable and a periodic rebuilding of infrastructure.<sup>137</sup>

It is important, when designing for the future, to understand the past and the events that led to today's Waikīkī. This is a central aspect of the design research; historical events altered the water's edge and the streams that once ran through Waikīkī. It is vital to understand the decisions that led to these manipulations of the urban fabric and the water's edge.

#### 7.4 CHALLENGES IN THE DEVELOPMENT OF WAIKĪKĪ

Waikīkī has gone through many changes and experienced many challenges throughout its development into what it is today. The government of O'ahu, for example, evolved from an independent absolute monarchy, to a constitutional monarchy, to a republic, to an American territory, and finally, to an American state. The evolution of events creates not only the texture of history within the islands but also the textures of design within our urban fabric.

At first, Waikīkī's development was slow due to Hawai'i's isolation in the Pacific Ocean; travel time for tourists heading to Hawai'i was much greater than that of many competing destinations for the same travel dollar. Waikīkī's evolution from an agricultural ahupua'a to a more westernized, tourist-centric district was also indirect.

Reaching consensus of what Waikīkī should be has always been problematic. While local newspapers may have celebrated the opening of the Moana Hotel in 1901 and the Royal Hawaiian in 1927, members of the public worried about the hotels' effect on the 'old Waikīkī, City planning

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<sup>137</sup> Ross, Stephenson. *The Importance of Planning to Waikiki: History and Analysis*. (Hawaii: University of Hawaii, 2008) 25-26.

officials expressed concern about the building heights, and planning critics such as Lewis Mumford declared they marred the landscape.<sup>138</sup>

Before Waikīkī was envisioned as a tourist destination, it was considered a desirable residential location and numerous lots were set aside for single-family homes. However, the continued development of hotels and an international gathering place made it impossible for Waikīkī to continue its residential emphasis.

Waikīkī ...suffered from a lack of architectural cohesion. While some effort was made in the commercial district along Kalākaua Avenue, architects such as Charles Dickey and Hart Wood built homes in the popular bungalow style and structures such as the Halekulani Hotel building won popular praise, but no comprehensive architectural theme was followed, such as that undertaken at Santa Barbara, California.<sup>139</sup>

Because of Waikīkī's small land area, all parts of it were put to use. However, this caused growing challenges—it increased population densities which in turn overtaxed street circulation systems, endangered pedestrians, aggravated parking problems, and discouraged local citizens from visiting. In direct response, the government implemented renewed citizen participation programs and down zoning, increased open space requirements at ground level, passed new parking regulations, and installed new parks.

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<sup>138</sup> Lewis, Mumford. *Whither Honolulu? A Memorandum Report on Park and City Planning for the City and County of Honolulu Park Board*. (Honolulu, 1938) 6.

<sup>139</sup> Ross, Stephenson. *The Importance of Planning to Waikiki: History and Analysis*. (Hawaii: University of Hawaii, 2008) 34.



Figure 67: 1915 Waikīkī Map Overlay<sup>140</sup>

Source: By Author

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<sup>140</sup> Image from Google Earth



Figure 68: 1927 Waikiki Map Overlay<sup>141</sup>

Source: By Author

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<sup>141</sup> Image from Google Earth

## CHAPTER 8: DESIGN

### 8.1 DESIGN OBJECTIVES

#### *RESTORING THE BREATH OF LIFE TO WAIKĪKĪ*

The design of this project is laid out on two scales, the macro and the micro. The macro scale focuses on a larger conceptual perspective of the Waikīkī district and the micro scale on a more focused, schematic perspective of a specific site. Understanding and analyzing different scales provides direction in identifying a practical and reasonable design focus. The macro scale proposes to redesign Waikīkī and its urban infrastructure, with a consideration for the potential changes caused by future water fluctuations. The overall macro site proposal is composed of numerous micro design phases; these phases are a framework of designs meant to be implemented sequentially.

The design basis of the macro scale proposal is informed by the Waikīkī that once was. Understanding the landscape and soul of the site will help restore the breath of life to Waikīkī. As with the macro scale, the micro scale focuses on the cultural influences within the specific site location. The micro design, if implemented, will provide the context, in the form of cultural nodes, for a variety of human experiences throughout Waikīkī's urban fabric. This network of cultural nodes will act as way finding points throughout Waikīkī, providing a cohesive human experience between the water's edge and the urban fabric.

Macro site: Waikīkī District/Waikīkī Peninsula/ Waikīkī Region

Micro site: Block contained by Paoakalani Avenue, Kapahulu Avenue, Kalākaua Avenue, and Ala Wai Boulevard.

Nurturing the human experience will provide an improved cultural journey through the interlaced space between the water's edge and the urban fabric, a space focused on the intimate relationship between two opposing elements. Designing for



human experience by following the guidelines of the existential and hermeneutic approaches will create a journey that will breathe life into Waikīkī, recalling its thriving yet humble beginnings.

### Design Matrix Research

As presented in figure 69, each research chapter in this manuscript extracts relevant material that informs the design decisions for this project's macro and micro proposals. The information provided consists of the following: design drivers of Honolulu, user journey and experience of program, formulation of water movement through site, human experience through cultural/spiritual journey, framework of design implements for all of Waikīkī, and design guidelines within proposed site.

	Chapter 1: Intro		Chapter 2: Human Experience
EXTRACT	<ul style="list-style-type: none"> <li>•Importance of topic</li> <li>•Problem Statement</li> <li>•What is at stake within our coastal areas</li> </ul>	EXTRACT	<ul style="list-style-type: none"> <li>•Ways to achieve human experience</li> <li>•Tangle and intangible components</li> <li>•Applications to architecture</li> </ul>
INFORM	<ul style="list-style-type: none"> <li>•Possible solutions to reach human experience</li> <li>•The importance and impact it has towards Honolulu</li> <li>•Advantages that Honolulu is unaware of</li> </ul>	INFORM	<ul style="list-style-type: none"> <li>•How to connect users to space through experience</li> <li>•How space can influence design and intimacy</li> <li>•Psychoanalysis of consciousness and memory</li> </ul>
DESIGN	Design drivers towards Honolulu	DESIGN	User journey and experience of program
	Chapter 3: Changes driven by forces of water		Chapter 4: History of water along civilizations
EXTRACT	<ul style="list-style-type: none"> <li>•Characteristics of water</li> <li>•Lever changes of water</li> <li>•Manifestations near water/Interstitial spaces</li> </ul>	EXTRACT	<ul style="list-style-type: none"> <li>•Civilization adaptation living with water</li> <li>•Lifestyles and culture near water</li> <li>•The symbolic meaning and utilization of water</li> </ul>
INFORM	<ul style="list-style-type: none"> <li>•How water is implemented into design</li> <li>•How water fluctuation alters the design framework</li> <li>•Current situations where water and land meet</li> </ul>	INFORM	<ul style="list-style-type: none"> <li>•Culture will impact human experience</li> <li>•The program spaces of water</li> <li>•Spiritual connection of water towards users</li> </ul>
DESIGN	Formulation of water movement through site	DESIGN	Human experience through cultural + spiritual
	Chapter 5: Connecting to the Urban Fabric		Chapter 6: Case Studies
EXTRACT	<ul style="list-style-type: none"> <li>•Values of existing urban fabric</li> <li>•Human experience created in fabric</li> <li>•Urban tectonics and how to implement in design</li> </ul>	EXTRACT	<ul style="list-style-type: none"> <li>•Design strategies on built cities</li> <li>•Way water design differ (canal/river/ocean)</li> <li>•Steps towards human experience</li> </ul>
INFORM	<ul style="list-style-type: none"> <li>•How to connect to the urban fabric</li> <li>•Transition of Human Experience from Water to Urban</li> <li>•Ways to utilize existing structures to design</li> </ul>	INFORM	<ul style="list-style-type: none"> <li>•How to design with water in urban fabric</li> <li>•How spaces were introduced within opposing forces</li> <li>•How the city adapted to change and thrived</li> </ul>
DESIGN	Design framework implementation to all of Waikīkī	DESIGN	Design guidelines within proposed site

Figure 69: Research Design Matrix

Source: By Author

## 8.2 DESIGN PROJECT [macro]

### Design Framework

The Native Hawaiians were intimately connected to and had a thorough understanding of nature. They knew how to live off the land and its resources in a sustainable and abundant manner.<sup>142</sup> To ensure proper and equal land management, the land and its resources were divided into sections through a system called ahupua'a. The land swathes were divided based on the water sources running from the mountaintops to the ocean. This system of land management protected the upland water sources, allowing streams to flow continuously, sustaining the Hawaiians' agriculture and aquaculture fields before returning to the sea.<sup>143</sup> Each community that occupied an ahupua'a was self-sufficient, using resources from the different land zones—forests, agricultural lands, shorelines, and ocean. Each zone provided various environmental conditions—different levels of rainfall, types of soil, and species of vegetation—which supported an assortment of agricultural crops and animals.<sup>144</sup> The streams were used to irrigate food crops through systems the Hawaiians constructed which diverted water to the fields of taro, banana, breadfruit, sugar cane, sweet potatoes, and yams.<sup>145</sup>

Understanding the importance of water movement in pre-contact Hawai'i and the role water played in the abundance of the Waikīkī ahupua'a gives weight to the proposal to revive these streams within the urban fabric today. Such a revival can provide a connection to Waikīkī as it was before that emphasizes human experience. This revival can also play a role in Waikīkī's future; as sea levels rise, the urban fabric will change. The revived streams can be a part of the solution for the overflow of water that will likely occur in the Ala Wai Canal.

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<sup>142</sup> Joylynn Paman, "Our Ahpua'a: Sustainable Living in Traditional Hawaiian Culture" Conservation Council for Hawai'i, 2010.

[http://www.conservehhi.org/documents/CCH\\_Posterguide10.pdf](http://www.conservehhi.org/documents/CCH_Posterguide10.pdf)

<sup>143</sup> The Maoli No DVD. Interlude #2 "The Ahupua'a"

<sup>144</sup> Linda Greene, A Cultural History of Three Traditional Hawaiian Sites.

<sup>145</sup> [http://state.hi.us/dlnr/dar/streams\\_cultural\\_importance.html](http://state.hi.us/dlnr/dar/streams_cultural_importance.html)

The sequential water rise given by the data gathered by NOAA, shows a detrimental impact towards the Waikīkī infrastructure as the Ala Wai canal will be placed under pressure as time accumulates. In figures 70 to 74, depict the sequence of changes the canal will experience as water rises, moving from existing conditions to a six-foot predicted rise, by which point the canal will overflow. The water level of Waikīkī's shorelines are also predicted to rise, which, together with the canal, would leave an island in the center of Waikīkī. Reviving the streams entering Waikīkī could alleviate some of the future pressures the sea level rise will likely have on the Ala Wai and the district.



Figure 70: Sea Level Rise: Existing<sup>146</sup>

Source: By Author

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<sup>146</sup> Image from Google Earth



Figure 71: Sea Level Rise: 3'<sup>147</sup>

Source: By Author

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<sup>147</sup> Image from Google Earth





Figure 72: Sea Level Rise: 4'<sup>148</sup>

Source: By Author

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<sup>148</sup> Image from Google Earth



Figure 73: Sea Level Rise: 5'<sup>149</sup>

Source: By Author

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<sup>149</sup> Image from Google Earth



Figure 74: Sea Level Rise: 6'<sup>150</sup>

Source: By Author

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<sup>150</sup> Image from Google Earth



A major missing link within Waikīkī's urban fabric is a sense of belonging. Other than surfing, locally, Waikīkī is known for its congested roads, walkways, and social gathering nodes. Incorporating more qualities of the old Waikīkī will create a new identity in the space. The macro scale design will examine the effects of reviving the Pi'inaio, Āpuakēhau, and Ku'ekaunahi Streams on the applications of water, vehicular, and pedestrian movement within Waikīkī. By observing the journey of these streams from their sources in the mountaintops down to the Ala Wai Canal, an understanding of how the site conditions affect them can be gained. For this scale, an urban masterplanning approach will be taken; a conceptual framework design will be provided as well as information on the movement of traffic to and from surrounding regions. Diagrams and maps will be provided with information on the sustainment of the current urban fabric as well as the applications it will have on the micro scale design.

#### Waikīkī Streams

Pi'inaio Stream. Kālia, a place where Native Hawaiian agriculture initially prospered, is now a vacation site for military personnel. Kālia was originally the wettest part of Waikīkī. The Pi'inaio Stream once coursed through Kālia, where it fed numerous fishponds built by kānaka maoli and then spread into a broad delta that stretched its many fingers and rivulets into the sea. This area was probably the richest source of fish, shellfish, and seaweed in all of Waikīkī.<sup>151</sup>

Āpuakēhau Stream. Ulunui is a section of Waikīkī once favored by the ali'i, kahuna, and kānaka maoli of all castes for its ideal surf and its beautiful branch of the Āpuakēhau Stream.<sup>152</sup> This area was a gathering place for both locals and visitors at that time. Princess Ka'iulani also built the beautiful Āpuakēhau gardens along the stream, which flourished with native plants. The Āpuakēhau Stream is today an apt emblem of these varied manifestations of value. Now, the stream's ghostly form

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<sup>151</sup> Andrea, Feeser. *Waikiki A History of Forgetting & Remembering*. (Hawaii: University of Hawaii Press, 2008) 39.

<sup>152</sup> Ibid. , 75

only occasionally awakens during heavy rains to flood the Outrigger Reef Hotel's Parking garage.<sup>153</sup>

Ku'ekaunahi Stream. The Ku'ekaunahi Stream coursed down a path now buried by Ōhua Street. This particular area of Waikīkī was once home to Queen Lili'uokalani and Princess Ka'iulani. This site held estates where Hawaiian royalty came to vacation and to create music and poetry. The stream's shores held many gardens created by Princess Ka'iulani which were said to represent the heavens—as the stream's waters trickled, light from the sun reflected the radiance of heaven. This stream emptied into the sea at Hamohamo, near today's intersection of 'Ōhua Street and Kalākaua Avenue. The land between Pi'inaio, Āpuakēhau, and Ku'ekaunahi Streams was called Waikolu, meaning “three waters”.

The importance of the streams explained would hold the characteristics of the phases that will be produced towards the future framework of Waikīkī.

Understanding the culture and history of each stream's site will help mold the design of the social nodes created and thus the human experience between the water and the urban fabric. Figure 75, a map of today's Waikīkī overlaid with public spaces and Figure 76, a map of old Waikīkī with the three streams show the differences in lifestyles between then and now and also the significance the streams held for life within the Waikīkī region. Each stream was used in a sustainable manner that prevented the overuse of its source. The life adjacent to the streams thrived as each provided places to cultivate as well as places to live and play.

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<sup>153</sup> Andrea, Feeser. *Waikiki A History of Forgetting & Remembering*. (Hawaii: University of Hawaii Press, 2008) 76.



Figure 75: Public Space Diagram<sup>154</sup>

Source: By Author

<sup>154</sup> Image from Google Earth



Figure 76: Historical Water Movement <sup>155</sup>

Source: By Author

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<sup>155</sup> Image from Google Earth

## Masterplan Phases

The masterplan of Waikīkī, which will transform the urban fabric into a water district, is divided into three phases. Each phase is located in the proximity of one of the three historical streams (see figures 75 and 76). Each stream will have its own identity but will intertwine with the others in a system of water transportation and circulation. The manipulation of the urban fabric and the water's edge will restore a sense of life to Waikīkī that has been missing for some time.

**Phase 1:** The first phase takes place at the Ku'ekaunahi Stream site. This particular site involves an extended portion of the design project as it contains the project envelope for the micro design site. The design here aims to restore the lifestyle of cultivation, living, and reflection.

**Phase 2:** The middle phase takes place at the Āpuakēhau stream site.

**Phase 3:** The last phase takes place at the Pi'inaio Stream site.

The goal for each phase is to recreate in Waikīkī a reflection of each of the old streams, bringing a measure of Waikīkī's true meaning, 'spouting waters,' back the life. In order to do this, each phase involves placing a new stream that begins at the Ala Wai Canal and move toward the ocean. This new movement of water through Waikīkī will not only create nodes for social gathering and culture but will also provide the setting for a new mode of transportation, transportation by boat.

## Circulation

The circulation is driven by four factors:

- Network of phases
- Application of the continuous flow of water
- Relief of the stress of water that will accumulate in the future
- Creation of a car-less Waikīkī

Prior to its transformation into a resort-dominated district, the plans for Waikīkī were to build residential neighborhoods and closed-gated communities; this explains the slim, compact roads and blocks. Because the commute, by foot, from the Ala Wai Canal to the shoreline ranges from five to seven minutes, Waikīkī is already

generally pedestrian friendly. This design proposal suggests taking this one step further and redesigning Waikīkī into a car-less district. In order for this to occur, new modes of public transportation must be introduced. The revival of the three streams will provide the means for boats to be introduced as a new form of transportation.

According to the macro design, Waikīkī's urban fabric will include two modes of transportation other than pedestrian: trolley and boat. Water transportation will play a large role in the movement of pedestrian traffic and goods. In order for water transportation to be effective, the three streams will be connected with canals running perpendicular to the shore. The macro design proposes transforming Kalākaua Avenue into a major canal, which will allow the movement of larger numbers of pedestrians from one part of the district to another. The design decision to create Kalākaua Canal is driven not only by the transportation needs of the design but also the future impact of sea level rise. The canal, along with the three streams, will help alleviate the predicted stress of sea level rise by providing multiple opportunities for water to circulate throughout the district.

Kalākaua Canal will provide two primary access lanes for water transportation, which will be applied throughout Waikīkī with pick-up and drop-off stations for pedestrians. Figure 79 shows the locations, chosen based on the sites of historical cultivation areas; strategically, the multiple cultivation areas are open green spaces and recreation areas that exist today. The water transportation stations will also help move pedestrian traffic coming from the Ala Moana, Pālolo, and Kaimukī regions.

The second form of transportation, a trolley system, will be implemented throughout Waikīkī to alleviate the use of vehicular activity. The trolley's primary route will start at the outskirts of the Ala Moana area, move through Waikīkī, and extend east and north into the Kaimukī district. The secondary route will reach outwards to the Pālolo region by connecting the main nodes of the Ala Moana and Kaimukī entry points. Just as with water transportation, the trolley system will include stations to

allow pedestrians to travel greater distances if needed. The locations of the trolley stops, as seen in figure 80 will be placed near the three historical streams—Pi'inaio, Āpuakēhau, and Ku'ekaunahi. The combination of water and trolley transportation systems will help move pedestrian traffic in a continuous flow through the region, just as the streams of Waikīkī once flowed. The network of transportation shown in figures 81 and 82 will provide a different human experience than the experience of congested traffic and limited parking that exists today.

### Service Lane

The movement and delivery of goods throughout the urban fabric is vital to the sustenance and growth of life in Waikīkī. The infrastructure changes proposed in the masterplan will provide an alternative approach to the movement of goods in the form of service lanes. The service lanes, like the trolley and water lanes, will be a hybrid in which water and trolley systems collaborate to disperse imported shipments throughout the urban fabric. Figure 83 is a diagram that displays the movement of goods from the holding port located at the Northwest Ala Wai gate to service boats that move the goods to drop off points within each individual phase (Pi'inaio, Āpuakēhau, and Ku'ekaunahi), where the goods will be picked up by service trolleys that will disperse and deliver them to their final destinations. The water and trolley hybrid service lanes allow a continuous flow of traffic where no service trucks are congesting Waikīkī's roadways.

The fire lanes are simpler than the service lanes. Their main points of entry are at the Northwest Ala Wai gate and the South East Kapahulu gate. These gates ensure all areas of Waikīkī can be reached within a timely manner from nearby fire stations (see figure 84). The primary access fire lanes are Ala Wai Boulevard and Kuhio Avenue, which will both be open boardwalks with a twenty-foot minimum roadway. The primary fire lanes are linked in a continuous loop to provide quick access and flow of traffic. Turning around may be achieved at any crossroad since there will be no cars and thus any street can act as a fire lane turnaround.





Figure 77: Phase + Stream Connection <sup>156</sup>

Source: By Author

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<sup>156</sup> Image from Google Earth





Figure 78: Macro Masterplan Phase<sup>157</sup>

Source: By Author

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<sup>157</sup> Image from Google Earth



Figure 79: Water Transportation Stations<sup>158</sup>

Source: By Author

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<sup>158</sup> Image from Google Earth





Figure 80: Trolley Transportation Stations<sup>159</sup>

Source: By Author

<sup>159</sup> Image from Google Earth



Figure 81: Circulation Phases <sup>160</sup>

Source: By Author

<sup>160</sup> Image from Google Earth





Figure 82: Overall Macro Circulation<sup>161</sup>

Source: By Author

<sup>161</sup> Image from Google Earth



Figure 83:Service Lanes<sup>162</sup>

Source: By Author

<sup>162</sup> Image from Google Earth



Figure 84: Fire Lane <sup>163</sup>

Source: By Author

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<sup>163</sup> Image from Google Earth



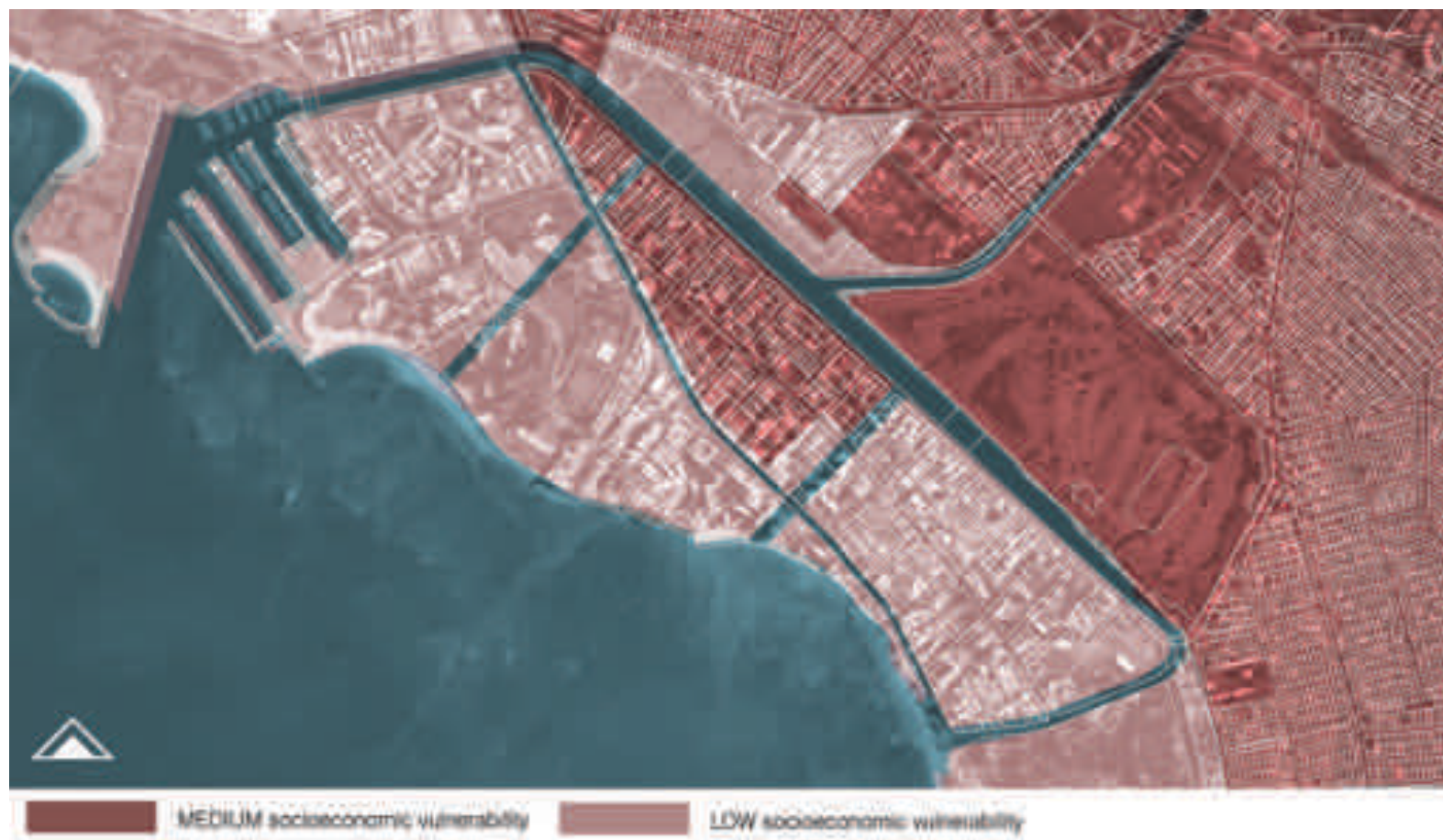


Figure 85: Socioeconomic Vulnerability <sup>164</sup>

Source: By Author

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<sup>164</sup> Image from Google Earth





Figure 86: Masterplan Render <sup>165</sup>

Source: By Author

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<sup>165</sup> Image from Google Earth

### 8.3 DESIGN PROJECT [micro]

#### Cultural Site Analysis

The incorporation of culture will also occur within the micro design. The site location and project design were selected based on the role culture can play in initiating human experience of a place. The culture and history of the micro site will create the framework for program and design guidance. The site, through its design, will highlight the life that once existed in Waikīkī at that location. This will in turn promote cultural and human experience for those who journey through the site.

The site is located in the block squared off by Kalākaua Avenue, Ala Wai Boulevard, Paoakalani Avenue, and Kapahulu Avenue shown in figure 78. In correlation with the macro scale design, the micro scale design project is within the Phase I premises. The reasons for choosing this section are driven by the cultural value of each avenue/boulevard; they are connected by two different sections of the ahupua'a, Hamohamo and Kaneloa. Individually, Hamohamo and Kaneloa carry rich spiritual and physical histories. The richness of Waikīkī's land and the waters running through, prior to development, provided abundant life. Waikīkī was a sacred site rich in aquaculture and sea harvesting and a favored dwelling and surf spot for kānaka maoli (Native Hawaiians). When Waikīkī's waters were stilled, it became a site developed for settlers and tourists seeking access to Hawai'i's sun, sand, and surf.

Creating a space where water and the urban fabric dance together in harmony will facilitate a plethora of new activities that engage human experience and thus create life. Imagine water and the urban fabric working harmoniously through design; the journey of experience will weave through transportation and recreation. Waikīkī will become a place of meditation—a place to reflect on and connect to the ancient lands, to take in the breath of life that the interlaced spaces, the dance of water and land, once provided and will provide again.



Figure 87: Overall Site<sup>166</sup>

Source: By Author

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<sup>166</sup> Image from Google Earth





The Hamohamo site runs through the Ala Wai Canal to the sea and is framed by Ka'iulani Avenue on one side and Ōhūa Avenue on the other. Two important women who once made Hamohamo their homes—Princess Ka'iulani and Queen Lili'uokalani— and who are memorialized on Ōhūa Avenue named Ka'iulani and Ōhūa.

The streets also overlaid evidence of powerful natural forces that formerly shaped Hamohamo: two of the freshwater streams that flowed from the mountains through Waikīkī to the ocean. Āpuakēhau Stream meandered through a channel now paved over by Ka'iulani Avenue, and Ku'ekaunahi Stream course down a path now buried under Ōhūa Avenue.<sup>168</sup>

The name Hamohamo, meaning, “to soothe, to rub gently,” already characterizes the essence and soul of the site. Designing a site that soothes one's soul and mind and provides a peaceful place that reflects what once was naturally involves water and working harmoniously with the natural landscape.

Queen Lili'uokalani's estate near Kuhio beach (see figure 89), in the vicinity of the proposed site and one of two estates in which she resided, was called Paoakalani, which means “royal perfume,” because of the incredible natural fragrances wafting from the native plants in her garden there. The estate was very important to Queen Lili'uokalani because it was a place where her family and friends gathered together to create, to play, and to enjoy each other's companionship. The queen composed many poems and songs during those days. Later in her life, after she was displaced from power, she composed a song about Paoakalani, in honor of the gardens. The verses and translation of “Ku'u Pua Paoakalani” follow:

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<sup>168</sup> Andrea, Feeser. *Waikiki A History of Forgetting & Remembering*. (Hawaii: University of Hawaii Press, 2008) 101-102

## Ku`u Pua I Paoakalani

E ka gentle breeze a pa mai nei  
Ho`ohāli`ali`a mai ana ia`u  
E ku`u sweet never fading flower  
I pua i ka uka o Paoakalani

### Hui:

`Ike mau i ka nani o nā pua  
O ka uka o Uluhaimalama  
`A`ole na`e ho`i e like  
Me ku`u pua i ka la`i o  
Paoakalani

Lahilahi kona ma hi`ona  
With softest eyes as black as jet  
Pink cheeks so delicate of hue  
I ulu i ka uka o Paoakalani

Nane `ia mai ana ku`u aloha  
E ka gentle breeze e waft mai nei  
O come to me k`au mea e li`a nei  
I ulu ika uka o Paoakalani <sup>169</sup>

O gentle breeze that wafts to me  
Sweet, cherished memories of you  
Of my sweet never fading flower  
That blooms in the fields of Paoakalani

### Chorus:

I've often seen those beautiful flowers  
That grew at Uluhaimalama  
But none of those could be compared  
To my flower that blooms in the fields of  
Paoakalani

Her face is fair to behold  
With softest eyes as black as jet  
Pink cheeks so delicate of hue  
That grew in the fields of Paoakalani

Now name to me the one I love  
Gentle breezes passing by  
And bring to me that blossom fair  
That blooms in the fields of

Paoakalani<sup>170</sup>

The queen's second estate was called Kealohilani meaning "royal brightness or glitter of heaven." This cottage was located along Kuhio beach (see figure 89), also within the Hamohamo boundaries. As can be seen, the portrayal of human characteristics within a location is based on the life that each site contained. Royal perfume, the glitter of heaven, and to rub gently are just a few of the influences that can be revived to inform the human experience of the site. The current location of Hamohamo, as it is today, no longer presents such an experience..

Today, Kapiolani Park, Waikīkī Zoo and Waikīkī Aquarium are considered places of play and education on the local sea life and wildlife. The ahupua'a that contained these sites was called Kaneloa. Kaneloa was a place known for its seasonal wetlands and sea channel. The history of the Kapiolani Park area is intimately tied

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<sup>169</sup> Queen Lili'uokalani. *The Queen's Songbook*. (Hawaii: Hui Hānai, 1999) 63

<sup>170</sup> Ibid.

to the development of Waikīkī and the degradation of the spouting waters sacrificed for the construction of an urban tourist destination.

As with Kalia, Kapiolani Park...served as a site of military occupation: during America's turn-of-the-century involvement with the Philippines, part of the park harbored Camp McKinley, the first U.S. Army post in Hawaii. <sup>171</sup>

To use water as an igniter for human experience within Waikīkī, we must understand the influence water had on the Native Hawaiians and how water cultivated life from mauka to makai. Water, to the Hawaiians, represents more than a way of life, it contains culture, history, and spirituality. The entity of water can be traced back to the ancient Hawaiian gods Kane and Kanaloa, two separate gods generally regarded together. These gods were said to bring water to dry areas of the islands. With their staff, they penetrated the earth and water gushed out, creating the streams that flowed into the fishponds. According to legend, Kane and Kanaloa were responsible for the fishponds around the islands, and mullet fish are specifically associated with them. If a mullet fish is spotted near certain sites around the islands, it is said that Kane and Kanaloa have visited the site, bringing abundance to the Native Hawaiians. Kane and Kanaloa are also associated with the sea; Kane is responsible for the canoe and Kanaloa, for sailing. Hawaiian navigation, which uses the stars, moon, and wind to way find, is also connected to the gods. Within Hawaiian cosmology, "the northern limit of the sun in the celestial ecliptic is called the "black shining road of Kane" and the southern limit on the celestial ecliptic that of Kanaloa." <sup>172</sup>

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<sup>171</sup> Andrea, Feeser. *Waikiki A History of Forgetting & Remembering*. (Hawaii: University of Hawaii Press, 2008) 114-115

<sup>172</sup> Internet Sacred Text Archive. "Hawaiian Mythology, Part V: Kane and Kanaloa." Accessed February 20, 2016. <http://www.sacred-texts.com/pac/hm/hm07.htm>.



Figure 89: Cultural Map Layout<sup>173</sup>

Source: By Author

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<sup>173</sup> Image from Google Earth



### Site analysis

Located on the Southern coast of the island of O'ahu, Honolulu experiences fairly consistent climate conditions. The region falls in a tropical climate zone with mostly dry summer seasons and medium to medium-high humidity levels year round.

Situated in the middle of the Pacific Ocean, Honolulu experiences mostly clear, sunny skies with seasons of unique trade winds that blow through. The highest-recorded temperature, recorded in 1998, was 95 degrees Fahrenheit and the lowest, recorded in 1969, was 52 degrees Fahrenheit.

Honolulu has two seasons, summer and winter. Its average yearly rainfall is 17 inches. During the wetter winter season, Honolulu averages two to three inches of rain per month compared to the drier summer season of only 0.2 to 0.5 inches of rain per month. Honolulu also has 105 days of precipitation and 278 days of clear sunny skies.

VARIABLE	1	2	3	4	5	6	7	8	9	10	11	12
temperature (F°)	73.5	72.8	72.9	73.7	74.8	76.6	77.6	78.3	78.4	77.9	76.6	75.0
windspeed (mph)	6.72	6.44	7.50	7.28	6.74	7.10	7.15	6.75	5.85	6.10	6.89	3.92
percipitation (mm)	174	138	174	146	127	90	125	112	89	128	175	172
wet days (mm)	10.4	9.2	10.1	10.3	8.3	6.5	8.1	6.9	7.8	9.3	10.5	11.1

Figure 90: Climate Diagram

Source: By Author

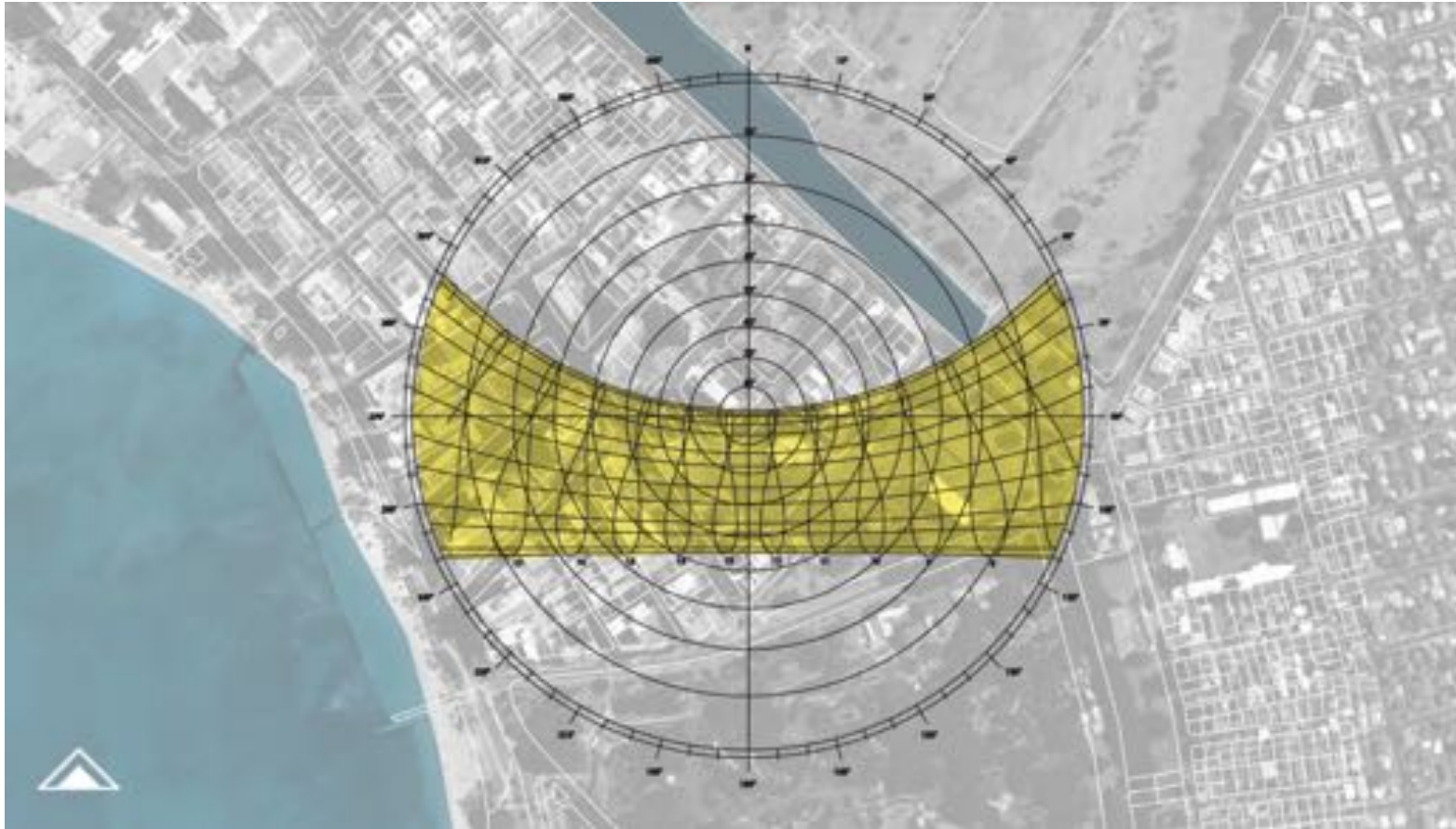


Figure 91: Sun Diagram<sup>174</sup>

Source: By Author

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<sup>174</sup> Image from Google Earth

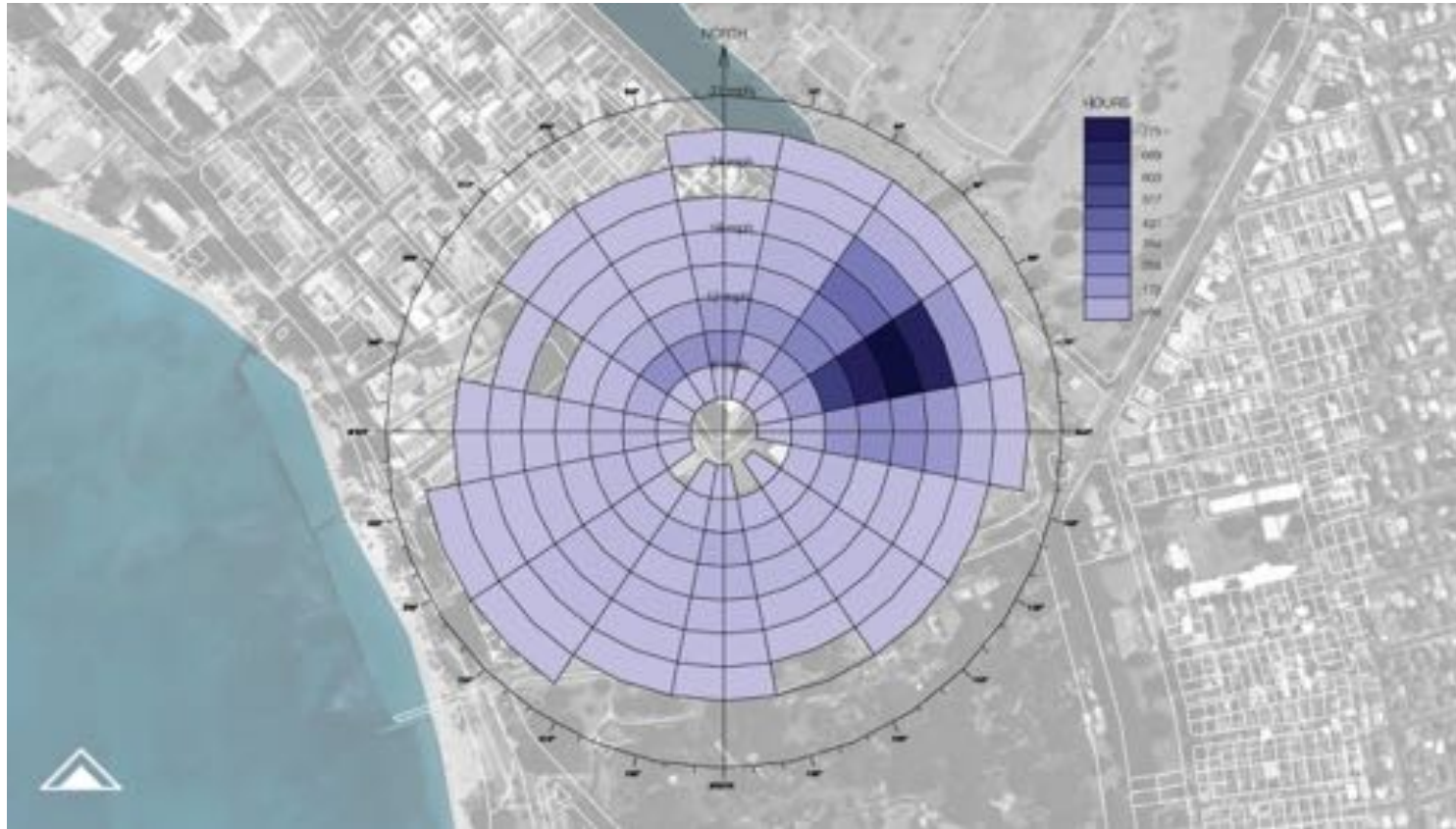


Figure 92: Wind Diagram<sup>175</sup>

Source: By Author

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<sup>175</sup> Image from Google Earth

Circulation displayed in figure 93 within the existing site displays a heavy amount of vehicular and pedestrian traffic as three main intersections (Kalākaua Avenue, Kuhio Avenue, and Ala Wai Boulevard) meet perpendicular to Kapahulu Avenue. Kalākaua Avenue provides a plethora amount of foot and vehicular traffic combined caused by the resort hotels adjacent to the 'Waikīkī Strip, leaving street side commute very dangerous especially when crossing streets or standing near the edge of the sidewalk. Kuhio Avenue provides a mixture of resort and mix-residential, as vehicular traffic remains the same in comparison to Kalākaua Avenue, the foot traffic is not as congested as the hotel BOH (back of house) or parking garages are typically adjacent towards this particular end of the street. Ala Wai Boulevard located within the mixed-residential zone provides a high amount of vehicular traffic as it is used as a gateway to enter into Kapiolani Boulevard. Though this zone is adjacent to Ala Canal, the pedestrian life and activity of canoe races, daily treks around the perimeter, fishing and swimming within the canal is now non-existent due to the history of pollution within the site.

The existing condition of vehicular and pedestrian traffic of Phase I is also driven by the surrounding districts and activity placed within walking distance: resort, recreation, residential and mix residential (see figure 94). The activities within these districts provide entertainment, life, leisure and recreation. Activities such as Honolulu Zoo, Kapiolani Park, Waikīkī Strip, food vendors, and street entertainment create life for users within the site but do not provide a pedestrian friendly to and from each location. Kapiolani Park itself is another primary destination for users to head towards to if not stopping over into Waikīkī. The importance of this urban node helped spur the creation of Waikīkī as we know today, but it also reflects in microcosm many of the conditions that we have seen shape Waikīkī as a whole.

Today's Kapiolani, named in honor of King Kalākaua's queen, is made up of Kaneloa and Kapua, two former land divisions that were once part of Waikīkī ahupua'a. Although these names Kaneloa and Kapua survive in the present – for a seasonal wetland and sea channel, respectively – most

visitors think of the park in terms of modern-day, built environments such as the Waikīkī Aquarium, Honolulu Zoo, and Natatorium memorial and pool.<sup>176</sup>

In summary the existing conditions of Phase I show much improvement not only to its infrastructure of vehicular and pedestrian movement but also in ways to engage human activity and human experience. As explained within the cultural history within the location of Phase I, a lot of the essence and soul of the site have been lost due to Waikīkī's exponential growth of resort and modern-day structures. The main soul of the site was lost within the Kaneloa and Kapua region providing a lustrous patch of wetland and water life.

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<sup>176</sup> Andrea, Feeser. *Waikiki A History of Forgetting & Remembering*. (Hawaii: University of Hawaii Press, 2008) 115





Figure 93: Existing Circulation<sup>177</sup>

Source: By Author

<sup>177</sup> Image from Google Earth



Figure 94: Adjacency Zone Map<sup>178</sup>

Source: By Author

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<sup>178</sup> Image from Google Earth

### Program Experience

The overall program must capture the soul of Waikīkī that once was, the life it cultivated and the streams that carried the nutrients from the mountains towards the sea. As explained earlier in the document, the life and history within Waikīkī as a Macro scale (spouting streams) and Micro Scale (Queen Estates and Gardens) must be brought back to the existing urban fabric of Waikīkī to help sustain life, as water level rise will cause a major disconnection between the urban fabric and the waters edge. Creating the interlaced space between water and the urban fabric driven by the culture and history of Waikīkī will help mend the disconnection and promote human experience as they journey throughout the site.

Vision: 'nurturing human experience will provide an improved cultural journey though the intimacy between the water's edge, and the urban fabric'. To understand the vision, a breakdown of the statement is as followed:

Nurture: care / feed / nutriment / sustenance / educate

Human Experience: Senses through tangible / intangible

Cultural: enriching / educate / experience / spirit / life / soul

Intimacy: affection / understanding / connection/ intertwine / braid / timeless

Between: within / among

The review of the breakdown displays the various characteristics that need to be affiliated alongside the cultural implementation of the design project. The design project needs to respect the history of the past, understand the urban fabric and conditions of the present and provide for the ever-changing natural conditions of the future. The guides within the timeline explained must recognize the cultural and history of the existing site.

Phase I will provide Waikīkī's first designed interlaced space focusing on the intimate relationship between water and land. This design ignites the cultural history of the Waikīkī District, which thrived within the hands of the Hawaiians. Historically



water and land working in harmony produced life and cultivation within the Hamohamo region. Cultural interlace aims to bring back the soul and memory of the site through design, providing a greater human experience for all to recollect. As discussed within the macro scale design, the historic streams will be brought back to its original location providing a mode of transportation as well as activities adjacent to its edge. As shown in figure 95 the creation of Ku'ekaunahi Canal will connect to Ala Wai canal reaching out towards the ocean.

The program for Phase I will incorporate two categories: (see figure 96)

- 1) Urban + Water Nodes
- 2) Human Experience Interlaced Space

The two different categories are different in the location that they are placed in, however they are geared towards the same goal in creating human experience within the interlaced space between the urban fabric and the waters edge. In figure 97- 98 the diagram displays the location of both categories within the program. The legend includes icons of crosshairs and circles. The gradual increase in size of the crosshairs reflects to the influence of the cultural influence within the location (larger size = larger influence). The gradual increase of the diameter of the circle reflects the density of users that will be experiencing the site (based on the size of the node as well as the activity it provides). The first category 'Urban + Water Nodes' are placed activity nodes that promote life and movement within the site. These activities include: living, institution, recreation, cultivation, and commute.

The living node is located near the upper Paoakalani Avenue. The structure of living includes living quarters (existing apartment complex) the reason to retain the existing apartment complex is driven by understanding the urban fabric and conditions of the present. The apartment complex within the three-block radius provides an abundant amount of living quarters to permanent residents compared to the living quarters of resorts, which provide for temporary guests. The living node

also is adjacent to the once historical Paoakalani Garden created by Queen Lili'uokalani.

The institution node is located near the intersection of the existing Kuhio Avenue and Kapahulu Avenue. The structure of the institution will provide an area where users learn and observe the importance of water in terms the ever-changing effects of nature. The location of the node is strategically placed adjacent to the proposed Ku'ekaunahi Canal producing the life of the stream that was once there. Within this node, users are introduced with cultural space that educates visitors and locals the history of Ku'ekaunahi stream.

The recreation nodes are split between two locations within Phase I. The first location is placed within the lower portion of the site (adjacent to ocean) and the secondary location is placed within the upper portion of the site (adjacent to Ala Wai Canal). The structure of the recreation node is to promote users to journey from both upper and lower portion of the site. The proposed trolley station bridge and Kuhio Avenue disconnect the two recreation nodes, however they are connected by the node specific activity that they offer. The upper recreation node houses canoe storage and sporting events. The canoe storage structure is driven by the history of canoe races within the Ala Wai canal. This popular spot was a primary gateway for canoe racing, as natural waves and wind were not a huge factor compared to open ocean events. Also the canal providing a straight and linear direction provided a clear understanding of distance traveled and a perfect setting for a circuit race. The lower recreation node is unique according to time. As creating interlaced space between water and the urban fabric, water must take its course and the design must respond to the change in an adaptive design rather than a restricted direction. The lower recreation node provides for areas of activity ranging from running, gathering (BBQ/picnics), intermural sports, and unofficial recreation gatherings. The lower recreation node acknowledges the change of sea level rise, as it will accept water to infiltrate the node and change its landscape. The activity will then adapt into water sports from swimming, paddle boarding, surfing and fishing.

The cultivation node is located within the intersection of Paoakalani Avenue and Kuhio Avenue. The structure of the cultivation will provide for the growth of plants as well as a marketplace to sell local produce. The cultivation node provides produce and goods for the living node north to its location as well as the urban fabric on the northwest of its location. The influence of local produce and local goods are promoted within the proposed car-less Waikīkī, to provide users with a backyard marketplace which will help alleviate the need to travel outside of the district. The cultivation area also helps educate users within the living node to cultivate and harvest produce within the provided open landscape of Phase I.

The commute node is located within the intersection of Kuhio Avenue and Kapahulu Avenue. The structure of the commute node will provide a variety of activities from transportation, food vendors, and transitions into the next phase. The commute node houses the trolley station, a location where users wait to get on the provided public transportation as well as get off. By providing food vendors for the users waiting on the next trolley, human experience and interaction is cultivated. The commute node also serves as a point of destination as each phase contains a stream with different characteristics and cultural drivers, therefore the commute node within the framework of the macro Masterplan each have their own unique identity. The node also provides as a bridge to provide movement from one side of the canal towards the other. At a larger macro scale, the commute node lays the foundation of the trolley transportation infrastructure to provide a continuous movement from Phase I to Phase III towards the adjacent districts surrounding Waikīkī.

The second category 'Human Experience Interlaced Space' promotes human experience based on the cultural values, spirit, and history of the site. These spaces include: Kealahilani Waterfront, Paoakalani Garden, and Hamohamo Passage.

Unlike the first category, human experience interlaced space aims to slow down the movement of the users to provide the spiritual connection towards the site. The human experience interlaced space intertwines with water + urban nodes as they are key intersections between each activity providing a continuous movement. Holistically, the user journey provides a shift of speed where points of the site are meant to move while others are meant to reflect. These interlace space provides the user a chance to reflect, recognize and understand the culture and soul of the site.

The Kealohilani Waterfront is located adjacent to Kuhio Beach. This location reflects Queen Lili'uokalani's Kealohilani Estate described as 'royal brightness or glitter of heaven'. Kealohilani Estate is an area where the queen would retreat and recollect spiritually. This specific interlaced space provides an area where a user may reflect of their day and recollect memories and thoughts. Described within the research portion of the document, there are three ways to attain human experience: first person, existential, and hermeneutic. All of which are directed toward memories based on the conscious/unconscious mind, location of site, and materials based on tangible and intangible. In this particular interlaced space, the setting and the meaning of Kealohilani provides an area where a user may reconnect and gain experience through memory. Intertwining with the future effects of sea level rise, Kealohilani Waterfront will provide a 360-degree environment surrounded by water.

The Paoakalani Garden is located between the cultivation and living nodes where it creates a transition of green space between the existing urban fabric and the proposed design project. The human experience of Paoakalani Garden reflects the second estate owned by Queen Lili'uokalani. In this estate she would retreat to tend to her favorite garden, which cultivated native plants and fragrance. In doing so, the proposed Paoakalani Garden design will attempt to recreate the life and fragrance. The interlaced space will help promote the human sense of smell where users will gather and enjoy the surrounding of native plants. Paoakalani Garden will also

serve as a soft edge from the existing urban fabric towards Phase I, where hardscape and landscape meet.

Hamohamo Passage is located alongside the edges of Ku'ekaunahi Canal. The waters edge is a key component to design, as water fluctuation will create a change of activity in an elevated perspective. This particular interlaced space focuses on the movement and activity throughout the entire journey of the waters edge. Hamohamo meaning 'soothing, to rub gently' is the home of Āpuakēhau and Ku'ekaunahi Stream. The essence of the interlaced space should convey a soothing and relaxing characteristic. As described by Queen Lili'uokalani, the Hamohamo region was a healthy and nourished region, which provided soul through its cultivation and life. In the proposed interlaced space areas to congregate as a group and appreciate the physical soothing interaction amongst peers and nature provides an extensive amount of human experience along the waters edge.



Figure 95: Proposed Site with Canal<sup>179</sup>

Source: By Author

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<sup>179</sup> Image from Google Earth



Figure 96: Program<sup>180</sup>

Source: By Author

<sup>180</sup> Image from Google Earth





Figure 97: Spatial Program Overlay [abstract]<sup>181</sup>

Source: By Author

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<sup>181</sup> Image from Google Earth



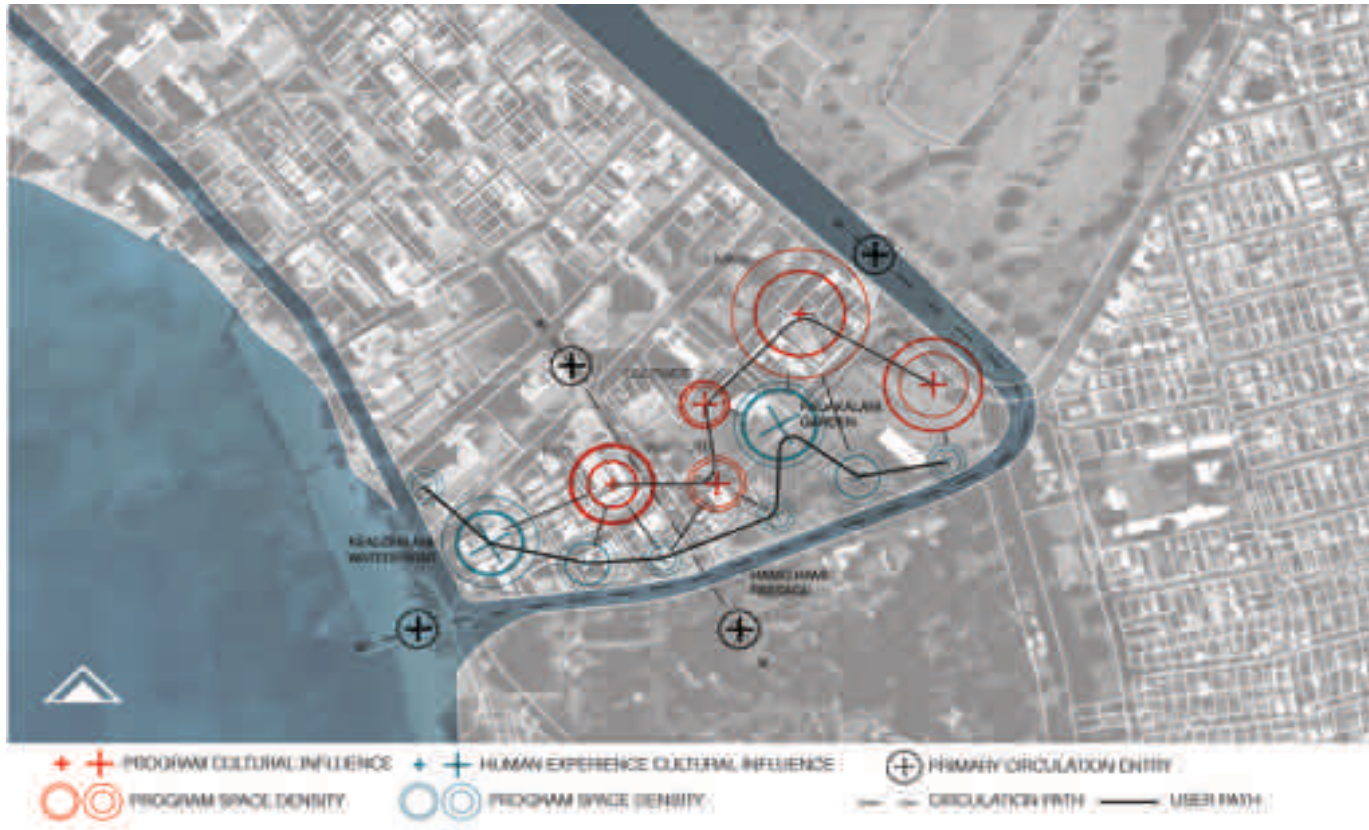


Figure 98: Spatial Program Overlay [labeled]<sup>182</sup>

Source: By Author

<sup>182</sup> Image from Google Earth

### Masterplan Experience

The existing urban fabric must be altered and manipulated in order to house Ku'ekaunahi stream and the network of programs within Phase I. The decisions of the selected structures that will be removed within the urban fabric are based upon the cultural site analysis as well as the program of spaces. The cultural site analysis provides a framework of specific areas on site, which lead historical and cultural value. Due to the design impact of the historical and cultural value, the existing structures that are within the perimeter of the space or program must be removed. The diagram shown in figures 99 displays the existing structures highlighted in red within and near a one-block radius of the design perimeter of Phase I. In comparison, the diagram shown in figure 100 displays the proposed structures highlighted in red to remain after the urban intervention. The structures that were removed, as explained are structures that fall in to the program space as well as the specified areas that obtains cultural value (Kealohilani Estate, Paoakalani Estate, and Ku'ekaunahi Stream). The following existing structures were removed due to the proposed site design: Aston Waikīkī Beach + adjacent restaurant and bars, Queen Kapiolani Hotel, multiple mid story apartment complex, and Jefferson Elementary School. The removal of the existing structures within Phase I do not pose a socioeconomic discrepancy as the removal of certain structures provided opportunities of cultural influence, open space, modes of transportation, and it also engages the adjacent districts of Kaimuki and Palolo by providing a nearby point of destination towards activity and human experience.

Recapturing the holistic design framework of the micro site masterplan, the cultural and historical presence within the spatial program influenced the two categories of program: Urban+ Water Nodes and Human Experience Interlaced Space. The two categories of program will provide a variety of social activity nodes and human experience spaces. The Masterplan displayed in figure 101 features the spaces that are within the program but most importantly it features the connection between the urban fabric and the waters edge. The map displayed in figure 102 overlays the Urban + Water Node category over the 3D Masterplan; in conjunction, figure 103

overlays the Human experience Interlaced Space category over the 3D Masterplan. Within figure 102 – 103 the spatial confinement and adjacencies through design are visually portrayed within design. The network between spaces are diagrammatically represented through the circulation of the design

The design features as described earlier within the program section includes:

- Urban + Water Nodes

- Recreation: Canoe storage, canoe racing, sporting events, intermural/unofficial sport events, gather (bbq/picnic), swimming, fishing, biking etc.
- Cultivation: marketplace, gardens, forum of local goods
- Living: existing living quarters of mid to high rise apartments
- Institute: educational structures towards culture and water
- Commute: trolley station, food vendors, restaurants

-Human Experience Interlaced Space

- Kealohilani Waterfront: water adaptive observation deck
- Paoakalani Garden: Queen Lili'uokalani influenced garden
- Hamohamo Passage: Multi-elevated platforms (riprap, bike lane, pocket gardens, boardwalk, and transitional green belt promenade.

As the proposed design spaces are introduced, the primary mode of micro transportation between each network of spaces is through walking and biking as shown in figure 104. Designed alongside the waters edge of the Kalākaua Canal, Ku'ekaunahi canal, and Ala Wai Canal platforms for human powered transportation are promoted. The experience of human powered transportation is heavily driven by the Hamohamo interlaced experience. The Hamohamo passage will provide a change of elevation towards the designed platforms to help adapt to the fluctuation of water. The provided platforms transition from rip raps adjacent towards the canal, bike lanes, pocket gardens, boardwalk, and transitional green belt promenade. The Hamohamo passage provides areas where users may sit and rest within pocket gardens alongside the lengthy canal. These pocket gardens will provide shade created by natural trees as well as structured tensile tents.

The final proposed masterplan shown in figure 105 exhibits the designed spaces provided by the program. A network of nodes and interlaced spaces driven by culture introduces the transition from the waters edge towards the urban fabric. As the masterplan design reaches near the perimeter of the site, vegetation continues to bleed onto the adjacent streets to create a soft transition between the two dialogues. It is within this transition zone where the user observes and understands that they have reached a point of destination within the three proposed phases.



Figure 99: Existing Urban Footprint<sup>183</sup>

Source: By Author

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<sup>183</sup> Image from Google Earth





Figure 100: Proposed Urban Footprint<sup>184</sup>

Source: By Author

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<sup>184</sup> Image from Google Earth



Figure 101: Proposed Masterplan<sup>185</sup>

Source: By Author

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<sup>185</sup> Image from Google Earth

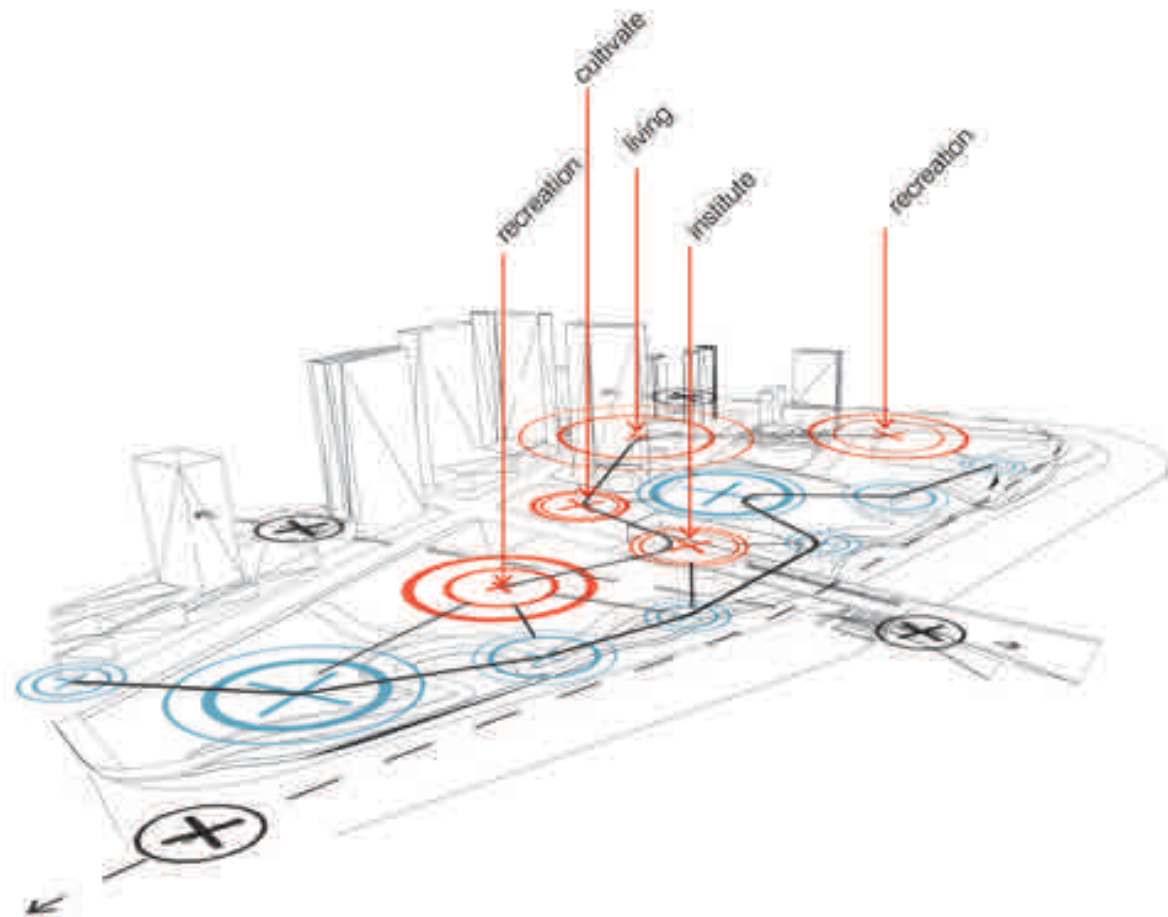


Figure 102: Urban + Water Nodes Overlay 3D Masterplan

Source: By Author



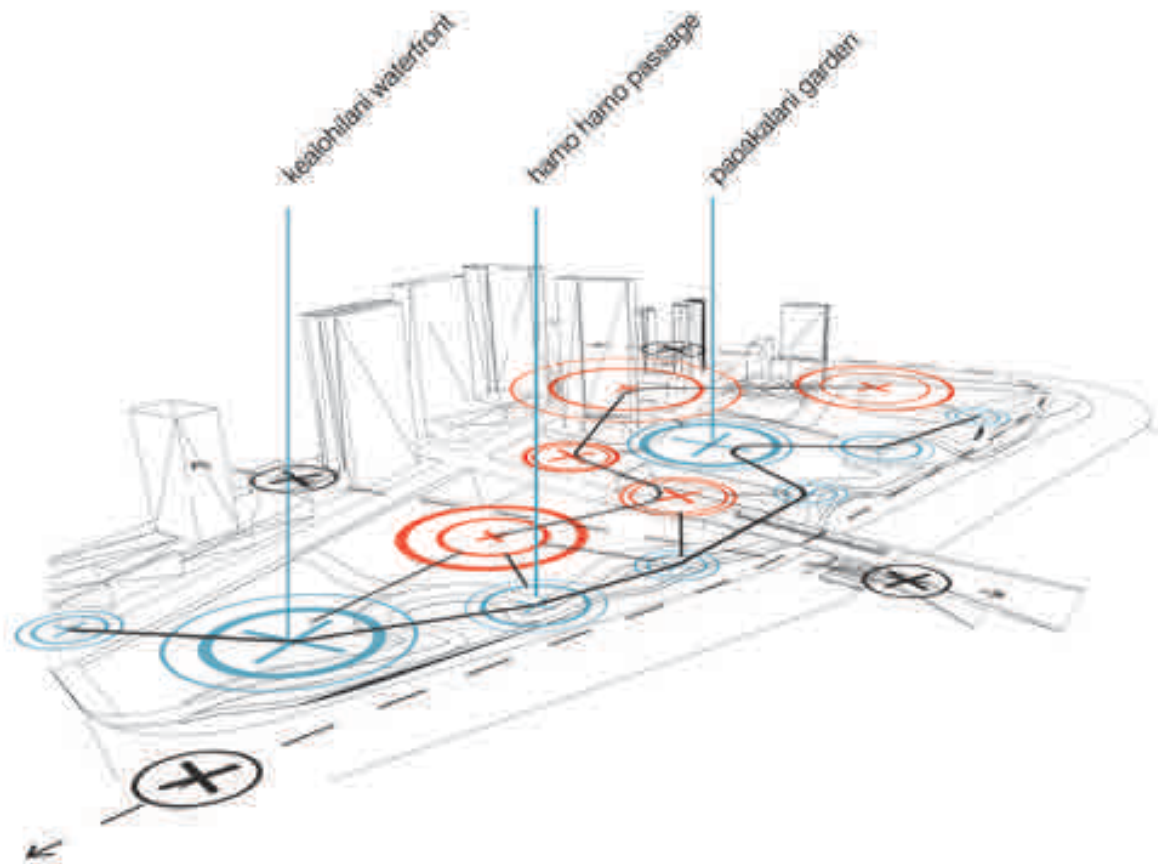


Figure 103: Human Experience Interlaced Space Overlay 3D Masterplan

Source: By Author

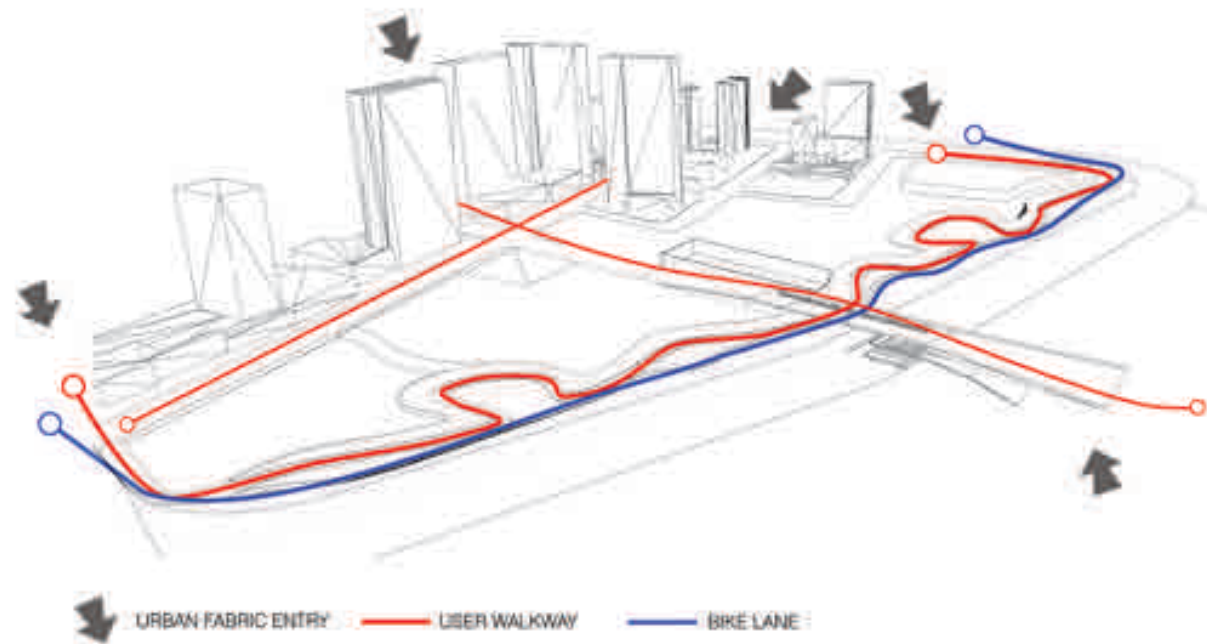


Figure 104: Micro Scale Circulation Diagram

Source: By Author



Figure 105: Micro Masterplan<sup>186</sup>

Source: By Author

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<sup>186</sup> Image from Google Earth

### Sectional Experience

To fully understand the experience created within and between the networks of program spaces, sectional diagrams and site sections are produced to interpret the life of the design. The areas of the sectional diagrams will be viewed within the human experience interlaced space: Kealohilani Waterfront, Paoakalani Garden, and Hamohamo Passage / trolley station + bridge (see figure 106). The range of the site section captures the connections from the urban fabric to the proposed masterplan reaching towards the waters edge (see figure 106). The strategic location of the sectional diagrams is placed within these particular areas, as it will also provide a view of the Urban + Water nodes to further understand the connection of the two program categories. The goals of the sectional diagrams are to show:

- 1) Analyze adjacencies + transition between program spaces [existing condition]
- 2) Analyze adjacencies + transition between program spaces [water level rise]
- 3) Key component of particular section highlighting activities and life

Providing these major section diagrams per program space will help create a clear understanding of the masterplan as well as the human experience covered within the designed space. The three section diagrams will also portray the situation of sea level rise and the site adaptation that will occur. The site section as shown in figure 107 represents the connection between the urban fabric and the site intervention. The transitional vegetation that bleeds onto the outskirts of the Phase I design provides a smooth transition into the space. The space is then introduced by the open space of the lower recreation area where users gather, a change in elevation starts to occur as the user reaches near the Ku'ekaunahi Canal to create a promenade towards the waters edge. The change in elevation helps accept the fluctuation of water while protecting the circulation spaces within the Hamohamo Passage. Displayed beyond the site section is the trolley station, creating the bridge over the canal to provide continuous circulation at a macro scale.



Figure 106: Section Diagram Plan<sup>187</sup>

Source: By Author

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<sup>187</sup> Image from Google Earth



Figure 107: Site Section

Source: By Author

Kealohilani Waterfront Section produces an analysis towards the designed space where water will be allowed to infiltrate the site. This particular area as discussed will provide land recreation within the existing timeframe and water recreation towards the future timeframe. The section diagram displayed in figure 108 analyzes the existing conditions of the lower portion of Phase I. The user journey within this particular space incorporates a transitional promenade green belt moving down in elevation towards the boardwalk – pocket garden – bike lane – rip rap and canal. Section diagram in figure 109 analyzes a different situation caused by water level rise within the space. The change in water elevation then alters the landscape adjacent to the waters edge. Wetlands are now introduced towards the edges of the site as different types of sediment and soil provide nutrients towards the new edges of the canal and ocean. The activities that are introduced within this particular section provide areas of gathering and commuting (see figure 110).

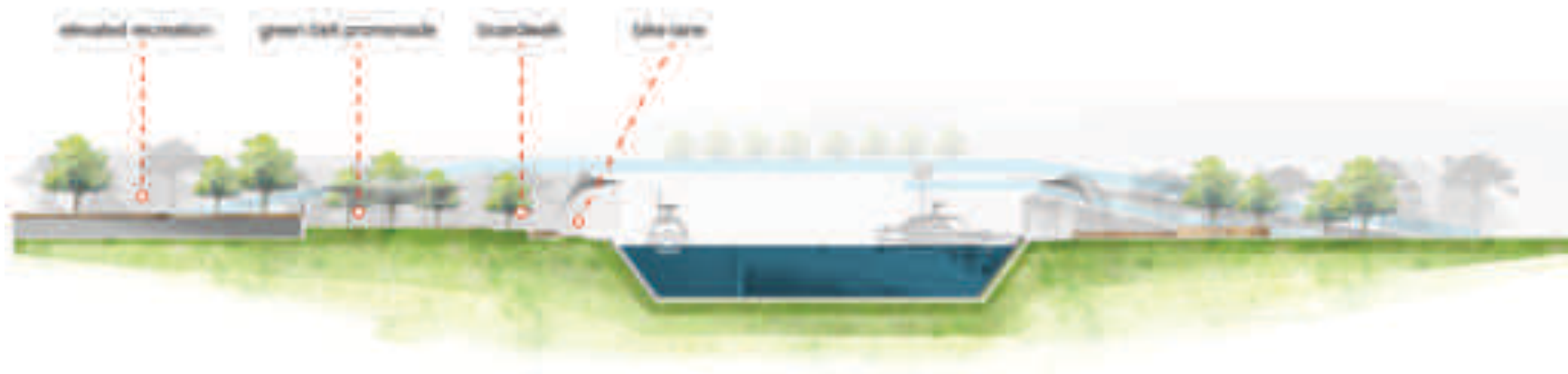


Figure 108: Kealahilani Section [proposed]

Source: By Author



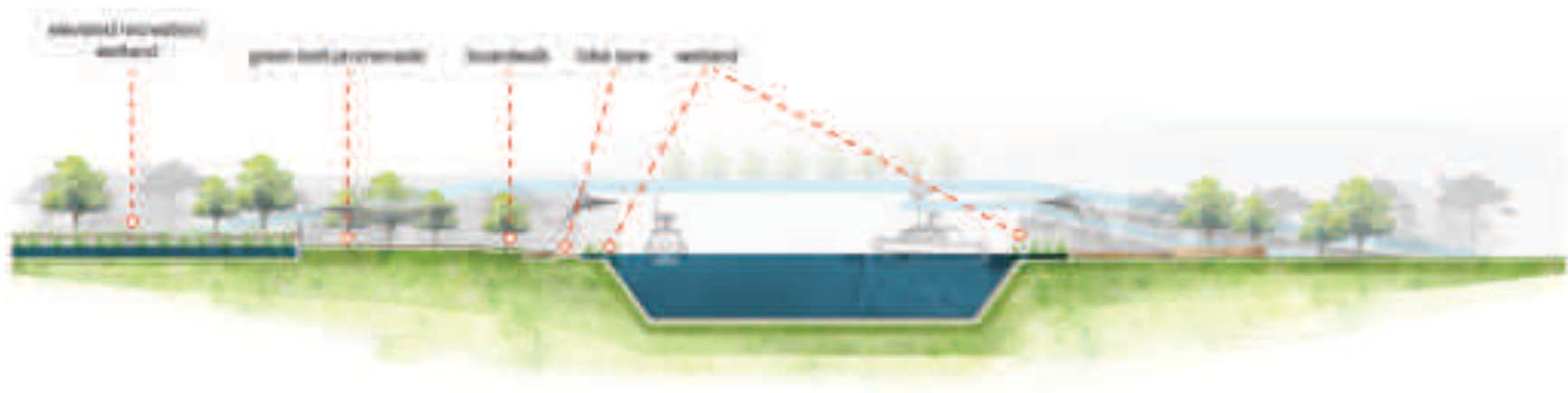


Figure 109: Kealohilani Section [water level rise]

Source: By Author



Figure 110: Kealohilani Section [human experience]

Source: By Author

Hamohamo Passage + Trolley Station Section produces an analysis towards the designed space where multiple spatial activities will take place due to the intersection of two elevated platforms: Hamohamo Passage and Trolley Station. Though each instance of user journey occurs on two different levels, the human experience remains interlocked through the activities provided. The user journey of the long section provides an analysis of the space created under the bridge as well as above the bridge (see figure 111). In comparison to the Kealohilani section, Hamohamo Passage will display the same continuous elevated platform from the waters edge reaching to the top of the promenade. Taking a closer look at the long section, figure 112 displays the human experience that is taking place within the belly of the bridge as well as the topside. Events such as: stage/podium for music events, canoes for fishing or selling produce, bike lanes and boardwalks for transportation, park-side restaurants, and platforms in the middle of the canal providing structure to the bridge being used as a place of activity. The user journey of the short section provides an analysis of the Hamohamo Passage as well as the relation of the bridge over the canal (see figure 113). In this section a clear understanding of the macro scale transportation modes (trolley and ferry) are utilized within the micro scale. The ferries are able to continuously move under the bridge to circulate and the trolleys are able to move over the canals to circulate as well throughout all of Waikīkī. The structure of the bridge is also displayed within this particular section as island-like platforms. These platforms will be the foundations of columns that will rise up to carry the weight of the bridge. The island-like platforms will be used as a platform for cultivation (similar to aquaponics) as well as a prime location for a fishing deck or a place of refuge for swimmers along the canal. The human experience section displayed in figure 114 provides an analysis of the functions within the program space of: Hamohamo passage and Trolley Station. Displayed within the diagram are waiting areas overlooking the ocean, floating restaurant below the belly of the station, circulation spaces, and recreation spaces beyond.

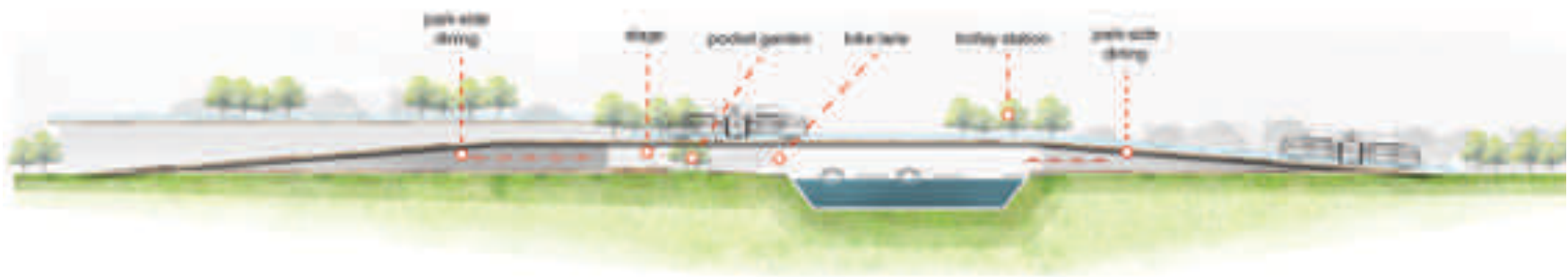


Figure 111: Hamohamo Passage + Trolley Station [long section]

Source: By Author

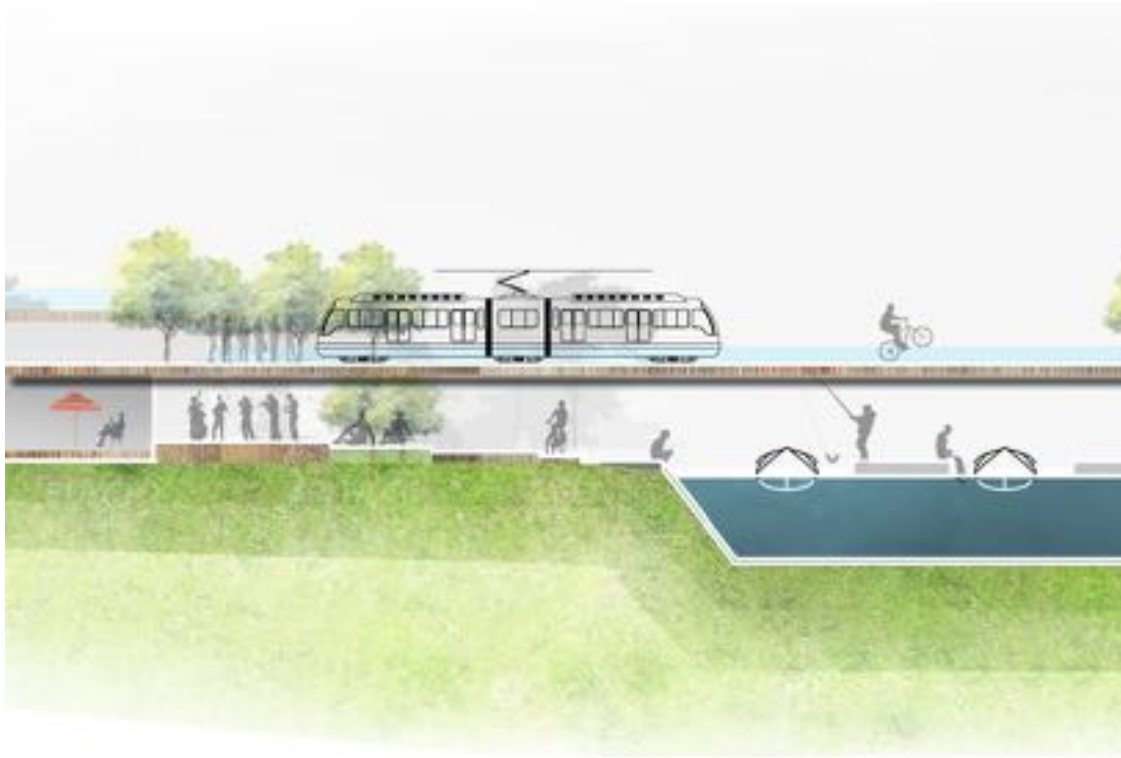


Figure 112: Hamohamo Passage + Trolley Station [long-human experience]

Source: By Author

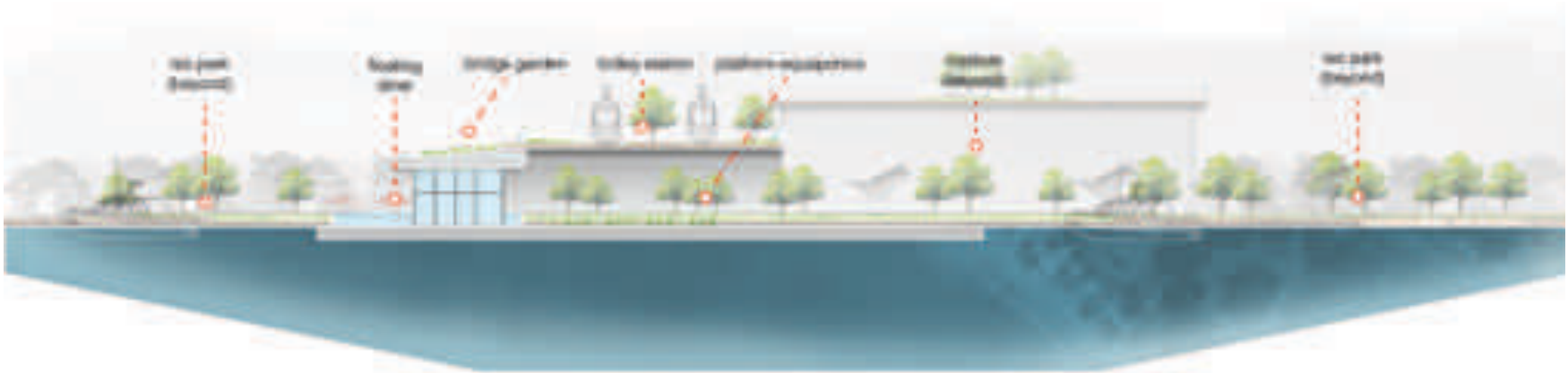


Figure 113: Hamohamo Passage + Trolley Station [short section]

Source: By Author

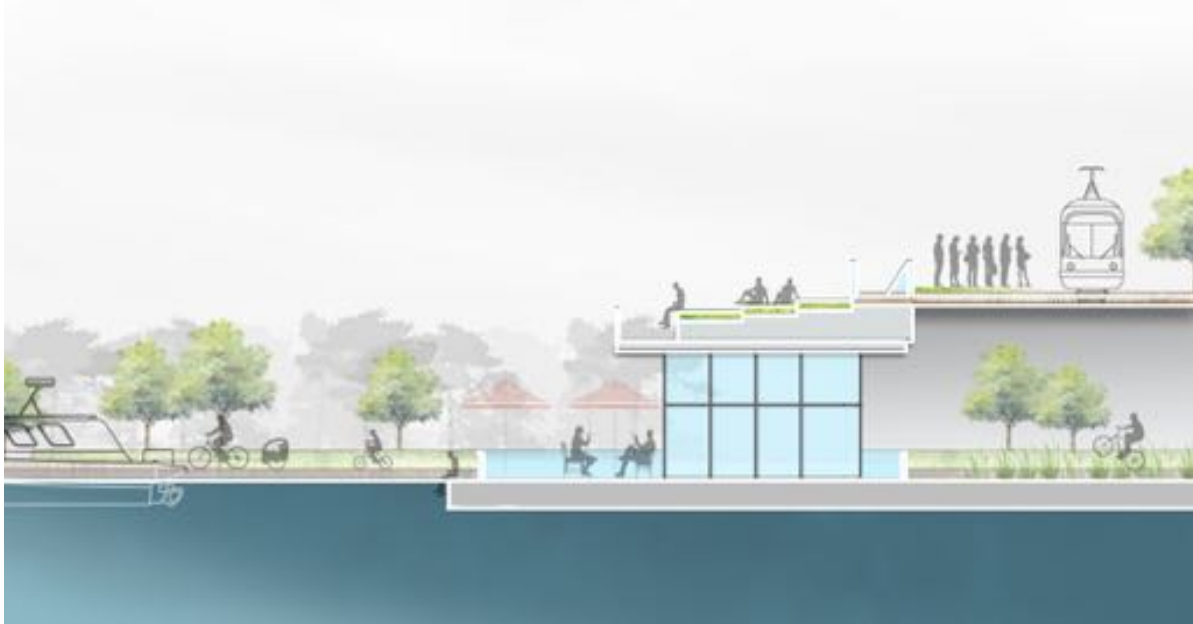


Figure 114: Hamohamo Passage + Trolley Station [short-human experience]

Source: By Author

Paoakalani Section produces an analysis towards the upper recreation area where a rec center / storage is designed in order to meet the historical context of the Ala Wai canal. The Ala Wai canal as discussed was an area where canoe racing, swimming, and fishing would take place. Creating spaces where users can interact with water and providing a housing for the tools that they use to interact with water will help relive and revive the spirit of this particular region. The user journey of the Paoakalani Section moves the user from the urban fabric towards the upper recreation area (see figure 115). It is within this area where a rec center will be designed to provide tools for water interactions. Alongside the Hamohamo Passage are elevated docks where fishermen enter their kayaks to head out and fish in the open ocean or return from their fishing expedition and lock up their kayaks in the storage for another day. The docks also provide as a prime location

for users to play and jump into the water, it also provides an area where vendors may sell their goods off their personal boat moving from one phase to the other. The diagram displayed in figure 116 illustrates the future situation where water infiltrates the site. Due to the elevated dock the Hamohamo passage remains uninterrupted while the riprap strip within the waters edge turns into a wetland area. The human experiences depicted in figure 117 illustrate the lifestyle within the upper portion of the site. In comparison to the lower portion, the upper area focuses on the water lifestyle within the existing and future timeframe of the masterplan.



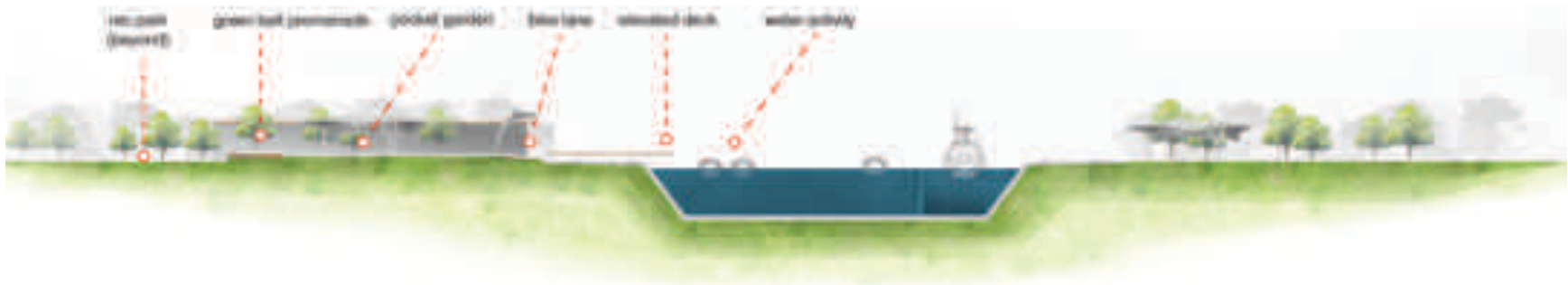


Figure 115: Paoakalani Section [proposed]

Source: By Author

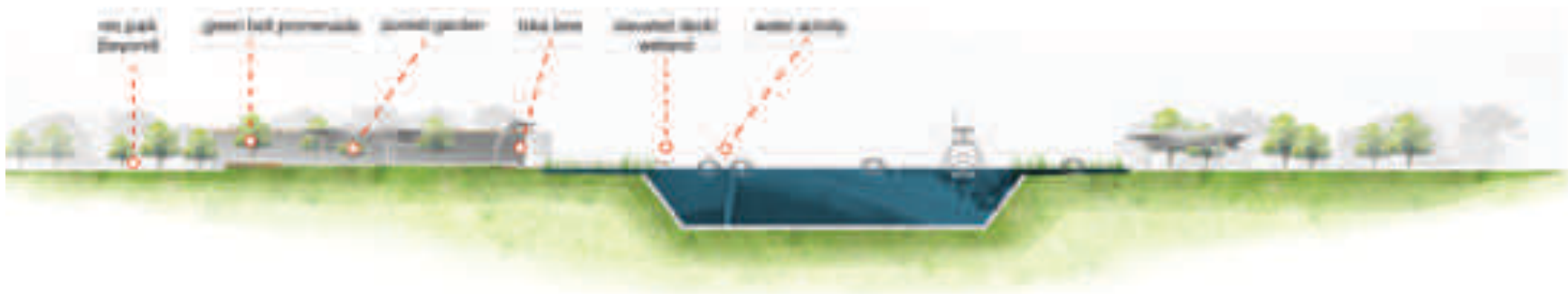


Figure 116: Paoakalani Section [water level rise]

Source: By Author

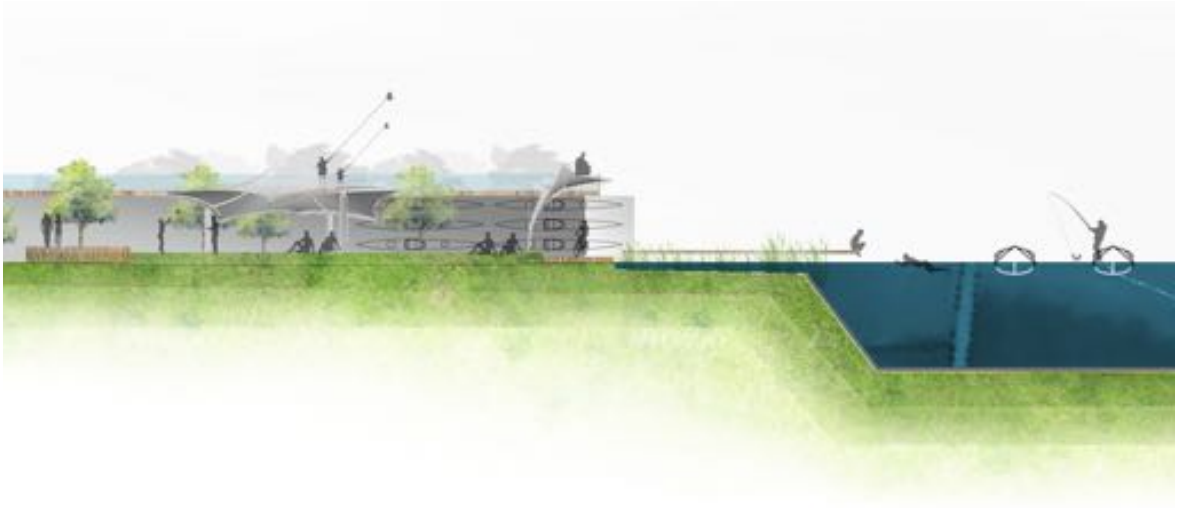


Figure 117: Paoakalani Section [human experience]

Source: By Author

### Rendered Experience

In relation to the sectional experience, the rendered experience portrays program spaces and masterplan design into one cohesive perspective illustration. The following figures characterize the human experience within specific locations of the site. Each selected perspective render also emphasizes the possible water level rise situation in the near future. The importance of viewing both situations within a specific perspective will show the changes of activity, characteristics, and overall nature of the site. The rendered experience will look at the following perspective location to establish the human experience within the site:

- Overall Masterplan Perspective Render [proposed + water level rise]
- Perspective Section Render [proposed + water level rise]
- Kealahilani Waterfront Render [proposed + water level rise]
- Hamohamo Passage Render [human experience]



Figure 118: Overall Masterplan Perspective Render [proposed]

Source: By Author



Figure 119: Overall Masterplan Perspective Render [water level rise]

Source: By Author

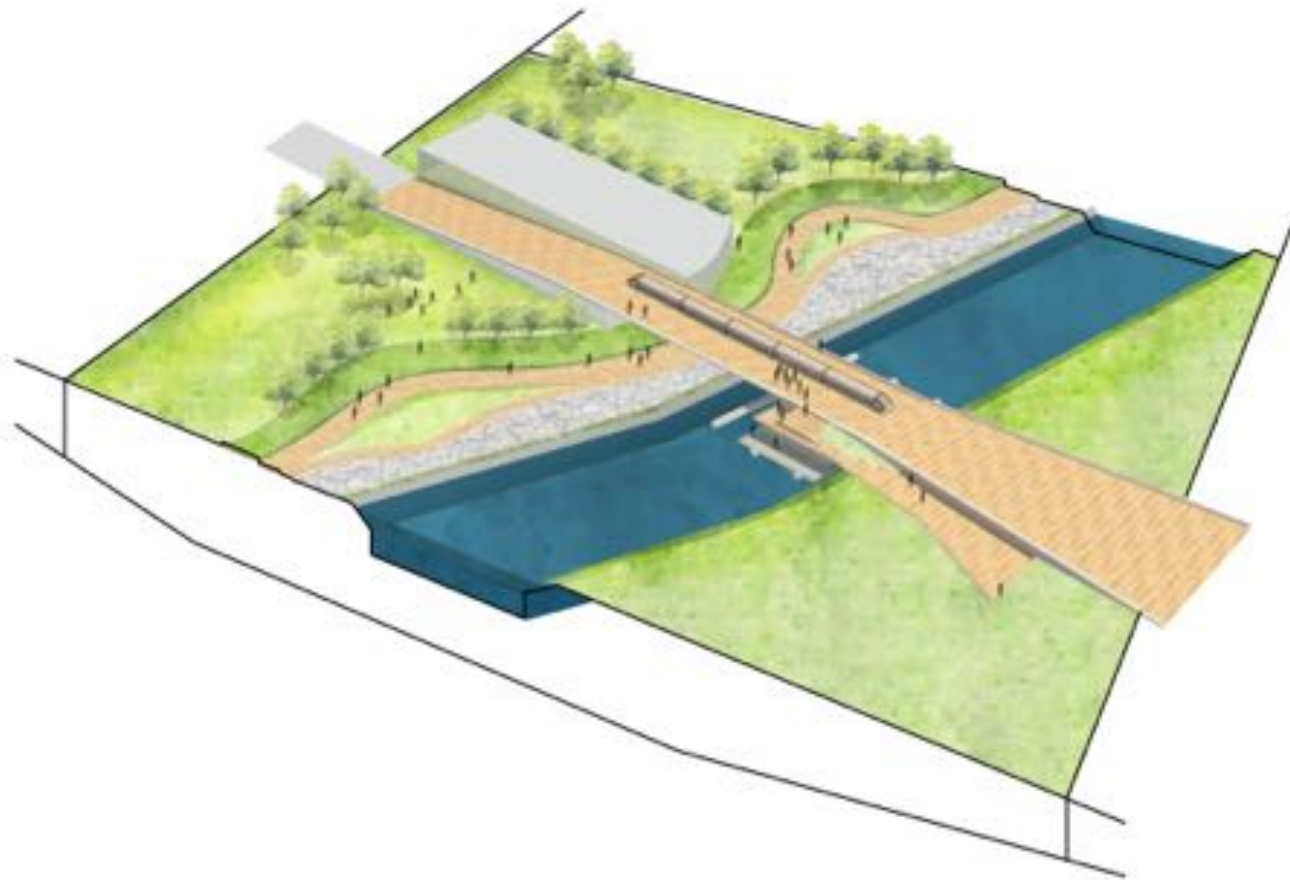


Figure 120:Perspective Section Render [proposed]

Source: By Author

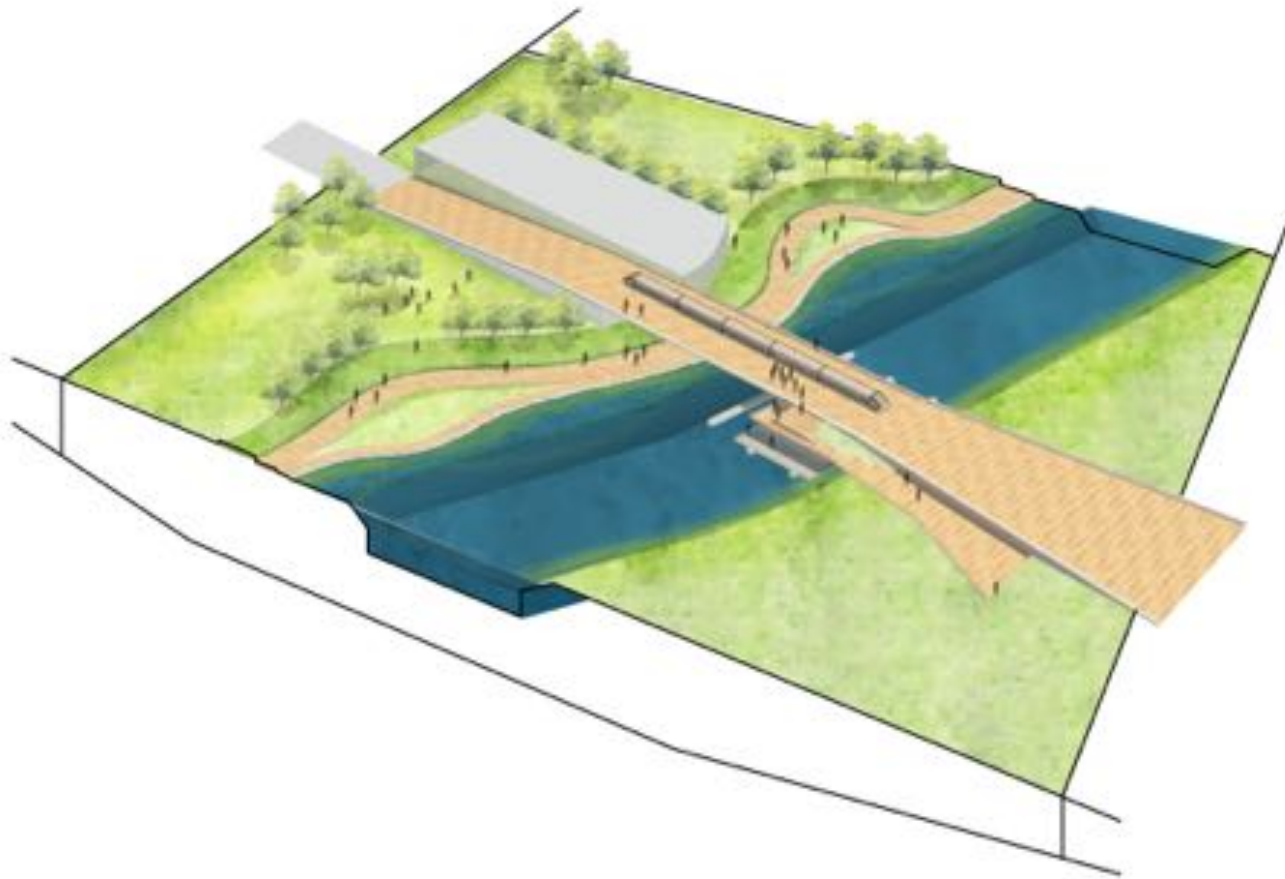


Figure 121:Perspective Section Render [water level rise]

Source: By Author





Figure 122:Kealohilani Waterfront Render [proposed]

Source: By Author



Figure 123:Kealohilani Waterfront Render [water level rise]

Source: By Author





Figure 124:Waters Edge Detailed Render [Human Experience]

Source: By Author

## CHAPTER 9: CONCLUSION

### 9.1 OVERVIEW

During the twentieth century, manifestations between water and land have become dissociated from emotional and physical experience, creating a deficiency within the human psyche. Over time, the ever-changing coastal environments have caused water to bleed into the urban fabric, resulting in the requirement of fortifications and putting growing pressures on coastal communities. In response, cities must transform. This need for transformation offers an opportunity to create interlaced spaces between the two seemingly opposing elements that can bring forward human experience.

This doctorate project focused on rebuilding the connection to emotional and physical experience in the manifestation between water and the urban fabric. Understanding ways to foster human experience in the conscious and unconscious mind through text, culture, and memories is the starting point for suturing the wound between water and land. In examining architectural spaces that have been built throughout history along the water's edge, this project sought to clarify the importance of the human experience of these spaces. The Hawaiian island of O'ahu faces the growing pressures of rapid population growth and water level rise due to climate change. This research provided a framework for new designs for the transformation of Honolulu's coastline that respond to O'ahu's growing needs and also address human experience of these interlaced spaces.

The overall goal of this doctorate project is to examine and clarify the human experience of created spaces at the water's edge. Acknowledging the existence of numerous and diverse human responses to architecture rather than focusing purely on the physical aesthetics of the examined structures helped to create a dynamic framework for how to design these transitional spaces and for how this project approaches the designs for the proposed interlaced spaces in Honolulu. The human experience, which involves emotion and memory, is the platform on which

the new interlacing spaces at the threshold of water and land are design, spaces that can help create deeper connections between the user and the environment.

The site chosen for the design aspect of this project is Waikīkī. The urban fabric of Waikīkī reflects the evolution of culture from pre-contact Hawai'i to the present day and contains a rich history of the area's natural and built environments. This history and culture provided the inspiration for the project's design framework on both macro and micro scales, including the designs for infrastructure, social nodes, and the creation of human experience within these spaces. It is here, at the convergence of water and land, where the Native Hawaiians thrived. This project challenges Waikīkī to rethink its relationship with water as a resource, a mode of transportation, and a point of destination.

## 9.2 RESULT

The research and investigation phase of this project clarified the importance of thoroughly understanding a site's elements and driving forces to ensure that a holistic methodology can be applied to the design of the interlaced spaces. It is vital to understand each connection as an individual, in order to extract key points within each category. The connections within the research and investigation phases included: the Human Experience, the Water Experience, the Urban Fabric Experience, and the Case Studies Experience. Each connection provided imperatives to be used within the methodologies for this project's designs.

Within the Human Experience section (chapter 2), the key points focused on ways in which the human mind reaches human experience. Memories, emotions, and experiences of the senses are formed and assembled to create human experience. Three philosophies of creating human experience, first person, existential, and hermeneutic, were explored. Each focuses on different approaches a researcher may use to understand and achieve experience. The examination of these approaches helped identify ways in which the cultural aspects of a particular

architectural site can build a greater connection for a user. The key points of this chapter informed the goals of the design project relating to user journey and program experience. The journey should provide a greater connection to human experience based on the existing culture of water and land in each site-specific location.

The Water Experience Section (chapters 3 and 4) focused on the historical meaning, symbolism, and cultural aspects of water. It is important to understand water universally, to discover its deep and meaningful connections to humans across multiple civilizations. In order to better appreciate the human experience of water, these chapters examined the water's influence and power in time and identified ways that different cultures have related to and viewed water in religion and practice. The human psyche's strong connection to water is due, in part, to the human dependence on water that begins in the womb and continues throughout life. Water's physical appearance, movement, and giant presence on earth are also a part of this relationship. In Hawai'i, water played a central role in daily life. From basic survival, to the formation of land divisions, to the development of religion, water affected all aspects of early Hawaiian culture. Understanding this relationship at specific Waikīkī sites provided a greater understanding of the ways in which water can connect to the urban fabric. The key points within chapters 3 and 4 informed this project's design for the implementation of the movement of water through the site as well as the meaningful connections to Hawaiian culture that can be brought forward to bridge the gap between site and human experience.

Within the Urban Fabric Experience (chapter 5), the key points focused on the role the urban fabric plays within experience, history, tectonics, and connection to the ever-changing environment. Identifying the urban fabric's value and how the framework of human experience is created through tectonics and the mindset of 'thinking in shadow,' provided illumination into how two opposing forces (water and land) are able to connect within the human senses. The key points of this chapter informed this project's masterplan design implementation for the infrastructure of

Waikiki. Involving water more actively within Waikīkī's urban fabric can provide a deeper connection of the human senses to water and land.

The Case Studies Experience (chapter 6) focused on how urban fabrics around the world are adapting to flooding, water fluctuation, and the general presence of water within the spaces at the water's edge. The regions that were analyzed were chosen because of each one's approach to the challenges created by water level rise within the urban fabric and solutions developed that promote human experience within the location. The analyses focused on site, infrastructure, water experience, urban experience, methodologies, material/texture, and procession. It was important to investigate all categories as each provides different driving forces that promote overall human experience.

This project examined current issues involved in the manifestations between water and land, spaces that have become dissociated from emotional and physical experience. Through research, investigation, and design, the human experience within the interlaced spaces can provide a significant connection between the water's edge and the urban fabric. This project acknowledged and fulfilled its three stated goals: to discover the interlaced space between the water's edge and the urban fabric, to present new manifestations within the interlaced space that cultivate human experience, and to design an effective interlaced space within the coastline of Honolulu, Hawai'i that responds to the changing environment.

### 9.3 EXTENSION OF PROJECT

This doctorate project sought to add an additional texture to the current research focused on adaptive design to sea level rise. This texture provides a certain level of cultural merit when manipulating the water's edge of an urban fabric. These adaptive edges must provide an association to culture, memory, and intimacy in order to restore the human experience that has faded within the urban fabric's waterfront.

The limitations of this doctorate project are present in the specificity of the site, Honolulu. The possible implementation of framework for future projects influenced by sea level rise is limited to Hawai'i and its parameters.

However, the methodologies and framework guidelines could be applied to urban fabrics in other locations to establish similar cultural and human experiences within the interlaced spaces. The transferrable methodologies are influenced by the design implemented within the interlaced space between land and water. The physical, cultural, and spiritual connections from mauka (mountain) to makai (ocean) create a framework that can be used for other sites. While projects that work with urban fabrics in other sites around the world, which contain water movement and fluctuation, may adopt the same or similar methodologies, it is important that they incorporate site-specific cultural connectivity between the land and water. Certain design influences affect the transferability of methodology to other sites, including the predicted fluctuation of water over time; the revival of cultural water features (streams, rivers, deltas); the potential for inclusion of new water-based infrastructure driven by water fluctuation and culture; and the overall reshaping of the urban masterplan based on water, human experience, history, and culture of the site.

#### 9.4 EXPANSION OF RESEARCH

This doctorate project, which focused on the intimacy between water and the urban fabric, culminated with a design framework masterplan for Waikīkī on a macro scale and an intervention incorporating spatial design programs on a micro scale. The next step for this project would be to conduct further research on the effects of the changing climate and sea level rise on the Ala Wai Canal to identify more specifically the amount of pressure relief that will be necessary to alleviate future flooding of Waikīkī and to identify the phase (I-III) at which the canal would experience this relief. Furthermore, the expanded research could help identify specific adjustments to canal size as well as exact elevated clearance for the water's edge platforms.

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